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ADDRESSES AND ORIGINAL ARTICLES

THE VALUE OF EXTRACTS OF SUPRARENAL CORTEX IN THE TREATMENT OF ADDISON'S DISEASE *

BY JOHN FREDERICK WILKINSON, M.Sc., Ph.D., M.D. Manch., F.R.C.P. Lond., F.I.C.

HONORARY PHYSICIAN IN CHARGE AND DIRECTOR, DEPARTMENT OF CLINICAL INVESTIGATION AND RESEARCH, ROYAL INFIRMARY AND UNIVERSITY OF MANCHESTER; LECTURER IN MEDICINE, UNIVERSITY OF MANCHESTER

AT the beginning of 1934 the Therapeutic Trials Committee of the Medical Research Council instituted trials at four different clinical centres of the value of suprarenal cortical extracts in the treatment of Addison's disease. The clinical, biochemical, and pathological data in this report refer only to the 9 cases treated at Manchester, but its main conclusions were adopted at a recent conference on the subject by clinicians who had taken part in the inquiry at all four centres.

EXTRACTS

For the purposes of the investigation it was necessary to have large supplies of suprarenal cortical extracts available so as to ensure that cases could be treated to the apparent maximum of their requirements and followed up for sufficiently long periods. The two commercial suprarenal cortical extracts used were generously supplied by the respective manufacturers through the Therapeutic Trials Committee. They were:—

Cortin (Organon Laboratories, London).—A clear solution put up in vials of 10 c.cm. of which 1 c.cm. represented 50 g. of fresh suprarenal gland and contained one rat muscle recovery unit.

Eucortone (Allen and Hanburys Ltd., London).—A clear solution put up in vials of 25 c.cm. of which 1 c.cm. was equivalent to 30 g. fresh suprarenal cortex.†

With both preparations the full quantity was usually given in one dose up to 10 c.cm., and in divided doses intramuscularly when greater than this amount; intravenously, larger doses were usually given in one injection.

No selection of cases was made with regard to the particular preparation to be employed; this depended solely upon the supplies of extract available and the demand upon them at the time.

CLINICAL MATERIAL

The patients with Addison's disease included in this investigation were all treated as in-patients at the Manchester Royal Infirmary.

During the period covered by this report (January, 1934–January, 1937) a series of 18 cases of Addison's disease has been collected and investigated. The objects of the present inquiry made it essential that the diagnosis of the disease should, as far as possible, be beyond doubt, and almost equally important that the patient should be free from complications likely to interfere with or obscure the results. Consequently certain characteristic features associated with Addison's disease were selected, and cases conforming to these criteria were utilised for the tests (see Table I).

The main points were asthenia and muscular weakness, digestive disturbances, abnormal pigmentation, loss of weight, low blood pressure, subnormal temperature, changes in blood chemistry.

Nine patients were considered to be unsuitable and were excluded from this investigation for the following reasons. Three had extensive bilateral acute pulmonary phthisis; in two the syndrome was secondary to malignant metastases in the suprarenals; two had abnormal clinical features; one had subacute combined degeneration of the spinal cord and Addison's disease and refused treatment for either condition; and one died before admission to hospital.

The nine remaining cases, exhibiting the typical features of Addison's disease, form the basis of this report. Seven were married women with ages varying between 32 and 56 years, and two were males aged 17 and 35 respectively. Reference to Table I shows that they all complained of asthenia, pigmentation of the skin, loss of weight, varying digestive disturbances (nausea, vomiting, indigestion, flatulence, diarrhœa), and were found to have low blood pressures, subnormal temperatures, and certain blood changes among other findings.

It is not proposed to consider here the symptomatology and diagnosis of Addison's disease, since this

* A report to the Therapeutic Trials Committee of the Medical Research Council.

† The manufacturers state that Eucortone is now issued in more concentrated form in 10 c.cm. vials.

TABLE I

Case.	Sex.	Age.	Length of history (years).	Asthenia.	Pigmentation.	Primary colour.	Loss of weight.	Digestive symptoms.	Previous crises.	Low blood pressure.	Subnormal temperature.	Pyrexia.	F.G.A.	Anæmia.	B.M.R. (per cent.).	X ray chest.	X ray suprarenals.	Family history.	Blood-urea.	Urine; casts and albumin.
AD/ 8	F.	56	? 2	+	+ +	Bl.	+	+	+	+	+	+	Achlorhydria.	Sl.	− 3	Neg.	?	−	High.	+
AD/ 9	F.	34	? 2	+	+ +	B.	+	+	+	+	+	+	Hypo-acidity.	Sl.	− 2	Neg.	Neg.	Tb.	High.	−
AD/11	F.	26	5	+	+ +	B.	+	+	?	+	+	Nil.	Achlorhydria.	Sl.	− 5	Neg.	?	−	−	−
AD/12	F.	40	? 13	+	+	B.	+	+	+	+	+	Nil.	Normal.	Sl.	− 1	?	Neg.	−	−	−
AD/18	M.	35	4	+	+ +	B.	+	+	..	+	+	+	Hypo-acidity.	Nil.	− 2	Neg.	Neg.	−	−	−
AD/22	F.	44	½	+	+ +	B.	+	+	+	+	+	+	Achlorhydria.	Sl.	−11	Neg.	Neg.	−	High.	−
AD/23	F.	32	1½	+	+ +	B.	+	+	−	+	+	Nil.	Hypo-acidity.	Nil.	− 2	Neg.	?	−	−	−
AD/24	F.	48	1	+	+ +	B.	+	+	−	+	+	Nil.	Achlorhydria.	Nil.	+ 4	Neg.	Neg.	−	−	−
AD/25	M.	17	½	+	+	Bl.	+	+	−	+	+	Sl.	,,	Sl.	− 5	Neg.	Neg.	−	High.	+

Bl. = Blonde. B. = Brunette. F.G.A. = Fractional gastric analysis. Sl. = Slight. Tb. = Tuberculosis.

inquiry was concerned only with the value of suprarenal cortical extracts in treatment. Excellent accounts of the disease have been published by other workers and particularly by Levy Simpson (1932, 1933, 1934) in this country.

The main features of my nine cases are briefly summarised in Table I. So far as possible each patient was given an adequate control period without treatment in order to get information about the condition before treatment and to ensure that spontaneous remissions were not occurring. During the test periods with the suprarenal cortical extracts no other treatment (such as glucose and saline solutions) was given apart from the ordinary nursing expedients; subsequent treatment with salt was started only when the patients were under stabilised conditions. Investigations of each patient included the following:—

Daily.—Temperature, pulse-rate, blood pressure (by the same observer with the same sphygmomanometer), examination of urine for albumin and casts.

Weekly.—Weight, blood analysis (urea twice weekly if abnormal or crises imminent), full blood count.

Before treatment (in certain cases not always possible) or from time to time.—Fractional gastric analysis, glucose-tolerance tests, basal metabolic rate, Wassermann reaction, radiograms of chest and loins.

Although not shown here, the coloration of most of these patients was recorded by direct colour photography before and after treatment. Autopsies were carried out on all the fatal cases in this series.

Case Notes

Two typical and representative cases are described fully, but in order to save space the other case notes have been abbreviated. Their main features are shown in Table I.

FIRST CASE

CASE AD/8.—A domestic servant, female aged 56 (admitted to hospital on Jan. 21st, 1934), complained of abdominal discomfort, nausea and vomiting, increasing weakness, loss of weight, and increasing dark pigmentation of the skin. Two years previously she had had an attack of "influenza" characterised by generalised pains and some alimentary disturbance, but no alteration in her colour was noticed at that time. She was in bed for three weeks and then made a fair recovery.

In April, 1933, and again in July, 1933, she was confined to bed on account of vomiting, epigastric pain, indigestion, severe flatulence, and loss of weight. When admitted to the surgical wards for investigation her weight was 8 st. 7½ lb. (about 2 st. less than it had been two years previously); there was no record of skin pigmentation, and radiological examinations of the alimentary tract and gall-bladder were normal. A fractional test-meal showed hypochlorhydria. She improved during her stay in hospital, and after her discharge remained well until Christmas, 1933, when she "caught a chill." From this time she complained of progressive weakness and for the first time an increasing "brownish-yellow" pigmentation of the skin. There was also a "dull" feeling in the epigastrium after taking a small amount of food—relieved by rest and warmth—occurring each day. Vomiting of a small amount of clear fluid about once a day took place with considerable nausea, aching in the sacral and mid-dorsal regions, headaches, and flatulence. Further loss of weight was evident. There were no abnormalities of the bowels or of micturition. The menopause had occurred normally six years before.

Previous medical history.—She had always been anæmic as a girl, and had suffered from asthma and bronchitis. She had never been pregnant.

Family history.—There was nothing relevant, and no history of tuberculosis was obtained.

Examination.—A thin emaciated edentulous woman; weight 7 st. She was very asthenic and showed very marked generalised dark brown pigmentation of the whole body. Normally she had been of a fair complexion. The dark brown pigmentation was particularly marked on the face and neck, forearms, hands (especially over the knuckles), knees, abdomen, iliac crests, and there were patches of pigmentation on the mucous membranes of the mouth (mainly confined to the left side of the tongue where teeth press), and vagina. It was particularly noticeable that the mammary areolæ were only slightly affected. The tongue was furred and moist, the hair was dark and the pupils greyish-brown in colour; no clubbing of the fingers; pulse, 88, regular, but of poor volume; blood pressure, 80/20; temperature, 98° F. There were no apparent abnormalities in the abdomen, heart, lungs, or central nervous system. Radiological examination of the chest was negative and of the suprarenals nothing was seen on the first examination, but a second examination showed that there was a small calcified shadow on the left side; it was thought at the time that this was probably not a suprarenal gland.

Albumin and casts were present in the urine. Blood: urea, 90; non-protein nitrogen, 70; inorganic phosphates, 4·9; serum sodium, 276; plasma chlorides, 590; blood chlorides, 485; blood-sugar, 80 mg. per 100 c.cm. Wassermann reaction negative. Glucose-tolerance test (Feb. 1st, 1934): 88 (0 hr.); 143 (½ hr.); 244 (1 hr.); 208 (1½ hr.); 154 (2 hr.); 150 (2½ hr.) mg. glucose per 100 c.cm. Blood count: red blood-cells, 4,560,000; hæmoglobin 88 per cent.; colour-index, 0·97; white blood-cells, 4600; polymorphonuclears, 68 per cent.; lymphocytes, 20 per cent.; large mononuclears, 11 per cent.; eosinophils 1 per cent.; basophils nil; slight aniso- and poikilocytosis; three nucleated red cells per 200 white blood-cells; platelets fairly abundant.

Fractional gastric analysis showed achlorhydria. The basal metabolic rate was decreased by 3 per cent.

Progress.—During the control period the condition of the patient did not show any improvement—asthenia being severe. Abdominal pain, vomiting, and nausea were present each day and the blood pressure remained low. The temperature was inclined to some irregularity and the pulse increased slightly. After the commencement of treatment with eucortone a big rise of temperature was noted on the 4th and 6th days, slowly falling again to normal limits (Table II). At this time the patient had shown remarkable improvement—the asthenia and gastro-intestinal symptoms having completely disappeared while there was much improvement in the degree of pigmentation—the areolæ returning to normal coloration; the skin still showed a generalised light brown colour. The blood count and basal metabolic rate remained unchanged.

In the third week of treatment she developed an evening pyrexia which showed a progressive increase with the development of asthenia and more obvious pigmentation; with the return of nausea and vomiting she rapidly became comatose and died without response to further treatment.

Autopsy.—Generalised pigmentation of the whole body, but apart from this there was particularly dark pigmentation of the skin, legs and knees, arms and face, neck and chest. Tongue: pigmentation at the side where the teeth pressed. Heart (240 g.): well-marked brown atrophy of the myocardium; valves and aorta normal; left ventricle, definite atrophy and thinning of its wall with brown pigmentation. Right lung (400 g.): very slight emphysema; about 5 cm. below the apex there was a small calcified tuberculous area about 1 cm. in diameter and 2 cm. below the pleural surface. Left lung (380 g.): similar to the right lung, but there was a calcified area 4 cm. in diameter close to the pleural surface. The larynx, œsophagus, trachea, duodenum, small intestines, pancreas, kidneys, and spleen were all normal. Large intestine: there was a small puckered ulcer about 2 cm. above the ileocæcal valve, but nothing abnormal on the corresponding peritoneal surface. Liver (1100 g.): somewhat fatty showing small scattered white points. Thyroid: small adenoma (1 cm. in diameter) in the left lower lobe. Suprarenal gland: the right was rather nodular and sections showed dense fibrosis with yellow caseous masses—its size was 4·7 × 3·7 × 1·2 cm. The left gland showed similar small areas of fibrosis and

caseation, but in addition the outer part showed large cavities full of pus—its size was 5·3 × 2·8 × 2·4 cm. No cortex was visible in either gland.

Microscopical examination.—Skin (from knee): showed a heavy deposit of pigment in the basal layer of the epithelium. Suprarenal glands: there was extensive caseating tuberculosis replacing all the cortex except one small degenerative island in the section. A moderate amount of medulla remained. Kidneys: glomeruli showed hyaline thickening of capillaries; the cortex was rather congested and had patches of early ischæmic atrophy. Colon: the ulcer could not be considered as tuberculous; there was much infiltration with plasma cells, lymphocytes, and eosinophils, but no polymorphonuclears. Lungs: showed caseous tuberculosis. Pancreas: normal; islets normal. Stomach: normal apart from mild superficial gastritis of the same cellular type as that in the colon ulcer. Thyroid: appeared to be in active but not excessive function; there was much lymphoid follicle formation; there was also a hypoplasia adenoma. Myocardium: slight hypertrophy of some fibres; slight fibrosis in patches. Spleen normal. Liver: fairly normal; moderate lipofuscin centrolobularly; near the portal tracts there were small nodules consisting of plasma cells, lymphocytes, and eosinophils; this was the same reaction as in the colon ulcer and stomach.

TABLE II—*Case AD/8*

Date in 1934.	Temp.* F.	Blood pressure.	Treatment (Eucortone c.cm.).	Weight.	Blood.					
					Sugar.†	Urea.†	N.P.N.†	Sodium.‡	Chlorides.†	Phosphates.‡
Feb. 6	97·4–97·6	82/62	..	..	..	76	..	..	..	..
7	97–98·4	82/62	..	..	..	..	..	..	..	..
8	97·7–97·8	78/70	..	..	..	..	..	..	..	..
9	98–98·4	78/70	..	..	..	..	..	..	..	..
10	98–98	76/68	1 iv.	7 st.	..	..	..	..	..	..
11	97·4–98·6	72/62	10 iv. 15 im.	..	..	..	..	..	..	..
12	97·6–98·4	70/62	25 iv. 25 im.	..	..	..	..	..	..	..
13	100–101	66/56	25 iv. 25 im.	..	91	120	88	260	480	5·0
14	102–102	70/50	25 iv. 25 im.	..	..	..	..	..	..	..
15	101–101	54/42	25 im.	..	..	122	..	..	..	..
16	98·4–98·4	..	25 im.	..	..	..	..	..	..	..
17	99·3–98·6	72/50	12·5 im.	..	..	..	..	..	..	..
18	98·2–99	70/50	12·5 im.	..	..	..	..	..	..	..
19	97·6–97·9	68/60	12·5 im.	..	..	..	..	..	..	..
20	98–97·9	72/54	12·5 im.	..	..	..	..	..	..	..
21	98–98	66/58	12·5 im.	7 st. 3 lb.	95	81	66	276	500	5·1
22	97·8–98	76/58	12·5 im.	..	..	..	..	..	..	..
23	98–98·5	72/60	12·5 im.	..	..	..	..	..	..	..
24	98–98·2	72/60	12·5 im.	..	..	..	..	..	..	..
25	97·6–98	72/60	12·5 im.	..	..	..	..	..	..	..
26	98·2–99	72/60	12·5 im.	..	94	84	..	276	500	5·3
27	98–99·3	68/58	12·5 im.	..	..	..	..	..	..	..
28	98·3–99·2	..	12·5 im.	..	..	..	..	..	..	..
Mar. 1	98·5–99	70/58	12·5 im.	..	..	..	..	..	..	..
2	99·2–99·7	?	12·5 im.	..	..	..	..	..	..	..
3	99–100	76/56	25 im.	..	..	..	..	..	..	..
4	100·2–101	78/60	12·5 im.	7 st.	..	..	..	..	..	..
5	99·6–101	80/62	12·5 im.	..	..	..	..	..	..	..
6	100–101	90/72	..	..	84	104	..	271	480	5·2
7	..	66/?	..	..	..	..	..	..	..	..

URINE.—Feb. 15: Albumin +; casts +(granular and hyaline); epithelial cells and leucocytes.
Feb. 19: Albumin +.
Feb. 28: Albumin, hyaline casts, epithelial cells, and leucocytes.
March 4: Albumin, epithelial cells, leucocytes, no casts.
iv. = intravenous; im. = intramuscular; N.P.N. = non-protein nitrogen. *Morning and evening temperatures given. †Whole blood. ‡Serum.

SECOND CASE

CASE AD/9.—A housewife, aged 34 (admitted to hospital March 14th, 1934), complained of progressive asthenia, very marked pigmentation, loss of weight, frontal headaches, indigestion, flatulence, nausea, vomiting, loss of appetite, and recent onset of dysmenorrhœa. Bowels were regular; no cough, night sweats, or chest trouble. She had two children (11 and 12 years), her mother died with "spinal trouble," and brother died with phthisis. Examination showed asthenia, emaciation, and typical distribution of dark brown pigmentation of the skin and mucous membranes. Blood pressure 80/58; pulse 104 regular, very soft; temperature, 98° F.; weight, 6 st. 13 lb. Nothing else of note in heart, lungs, nervous system, or abdomen. Urine, normal; fractional gastric analysis gave free hydrochloric acid titres of 0 (0 hr.); 0 (½ hr.); 0 (½ hr.); 6 (¾ hr.); 8 (1 hr.); 11 (1¼ hr.); 5 (1½ hr.); 5 (1¾ hr.); 3 (2 hr.) c.cm.

Blood count: red blood-cells, 4,420,000; hæmoglobin, 86 per cent.; colour-index, 0·98; white blood-cells, 9700 (polymorphonuclears 62·5 per cent., lymphocytes 28·5 per cent., large mononuclears 6·5 per cent., eosinophils 1·5 per cent., basophils 1 per cent.); very slight aniso- and poikilo-cytosis; no nucleated red cells; platelets abundant. Blood: urea, 50; sodium, 300; chlorides, 440; phosphates, 4·1; sugar, 105 mg. per 100 c.cm.

Radiograms of the chest and loins were normal. Basal metabolic rate was decreased by 2 per cent.; Wassermann reaction was negative; glucose-tolerance curves were not completed on three separate occasions owing to severe nausea and vomiting.

Treatment.—She was given eucortone in doses of 25 c.cm. twice daily from March 16th, 1934, and then 12·5–25 c.cm. daily and appeared to improve for a time with slight diminution in the pigmentation, although she was still liable to occasional attacks of nausea and vomiting. The systolic blood pressure varied between 80 and 92 and the diastolic from 40 to 66 mm.; the temperature ranged from 97·4° to 100·4° F. The basal metabolic rate and blood counts remained unchanged, but the weight fell slowly to 6 st. 6 lb.

On April 12th, 1934, the temperature rose sharply to 103° F., albumin and casts appeared in the urine, vomiting recommenced and increased on the following day despite the administration of eucortone 50 c.cm. intravenously and 25 c.cm. intramuscularly; the patient died 36 hours later. The pigmentation had not increased, and the blood chemistry was: urea, 98; sugar, 105; sodium, 282; chlorides, 430; phosphates, 5·9 mg. per 100 c.cm.

Autopsy.—One small calcified tuberculous nodule (2 mm. diam.) at the apex of the left lung. Right suprarenal (3·75 × 1 × 1·5 cm.) and left suprarenal (4·5 × 1·5 × 1·5 cm.); glands were tough, fibrous, and showed a few small areas of cortical hyperplasia. Microscopically there was very extensive caseous tuberculosis—a few areas of hyperplastic cortex remaining as the only histological evidence of the original gland. There was nothing else of importance in the other organs.

THIRD CASE

CASE AD/22.—This case (a housewife aged 44) has already been partially described (*Lancet*, 1936, **2**, 967). The patient complained of increasing weakness and lack of energy for six months, with loss of weight, nausea, vomiting, progressively increasing pigmentation of the skin, and amenorrhœa. Examination on June 18th, 1935, showed emaciation and asthenia. Considerable pigmentation of skin and mucous membranes. Blood pressure 90/60; pulse 96, regular, poor volume; temperature 97° F.; weight, 6 st. 4 lb. The heart was slightly enlarged but not otherwise abnormal. There was nothing

of note in the chest, abdomen, or nervous system. Urine: traces of albumin and diacetic acid; Wassermann reaction negative; basal metabolic rate was decreased by 11 per cent.; fractional gastric analysis showed achlorhydria; radiograms of the chest and suprarenals were normal; glucose-tolerance curves were as follows:—

	0	½	1	1½	2	2½ hours.
June 22nd	109	141	162	182	137	95 mg./100 c.cm.
August 7th	109	137	162	167	117	105 „ „

Blood count: red blood-cells, 4,224,000; hæmoglobin, 74 per cent.; colour-index, 0·90; white blood-cells, 8200 (polymorphonuclears 47 per cent., lymphocytes 49·5 per cent., large mononuclears 3 per cent., eosinophils 0·5 per cent., basophils nil); slight aniso- and poikilocytosis; no nucleated red cells; platelets diminished in numbers. Blood chemistry: urea, 60; sugar, 80; phosphates, 5·3; sodium, 312; chlorides, 445 mg. per 100 c.cm.

Treatment.—The patient was given eucortone (12·5 to 25 c.cm. daily) from June 23rd, 1935, without improvement; 4 lb. in weight was lost, and the systolic blood pressure was about 75–85 mm. There was slight improvement in the blood chemistry (urea 44; sugar 82; phosphates 4·7; sodium 320; chlorides 450). On August 9th cortin was given daily in doses of 20 c.cm. and increased four weeks later to 40 c.cm. intravenously and intramuscularly, when there was a relapse and the systolic blood pressure was 90–95 mm.; there was slight pyrexia (100° F.), and she had albumin and casts in the urine. (Blood-urea 33 mg.; weight 5 st. 1½ lb.) The crisis was successfully surmounted and the cortin was diminished to 10 c.cm. daily. There was a slight gain in weight (5 st. 5 lb.), and the pigmentation had definitely improved; by January, 1936, she had been maintaining a normal temperature, a systolic blood pressure around 98–100 mm. (once 110) and diastolic of 50–70 mm. Her appetite was good, and she was in very much better condition than she had been during the whole period. (Blood chemistry normal; blood pressure 105/70; weight 5 st.) On Feb. 15th, 1936, she had a sudden and first paroxysm of auricular fibrillation and died within an hour.

Autopsy.—Extreme atrophy of both adrenal glands, which were translucent and could only be recognised as shadows in the areolar tissue at the upper pole of each kidney—size about 0·5 cm. × 3 cm. Microscopically only a few nodules of cortical and medullary tissue were recognisable. No evidence of tuberculosis in any organ.

FOURTH CASE

CASE AD/25.—A male clerk, aged 17, was admitted to hospital on Dec. 5th, 1935, complaining of severe weakness, loss of energy and weight, dyspnœa, nausea, vomiting, loss of appetite, flatulence, increasing pigmentation, and recurrent fainting attacks for six months. His mother had achlorhydric hypochromic anæmia and his mother's sister pernicious anæmia, both having attended my clinic for some years. Another child, aged 15, is under investigation as a potential case of Addison's disease.

Examination.—Extreme asthenia; emaciated and of eunuchoid type without any secondary sexual characteristics. Weight, 5 st. 8½ lb.; height, 5 ft. 3½ in.; blood pressure, 90/60; pulse 88, regular, feeble. Normally of blond coloration, he showed a marked brown pigmentation of skin and mucous membranes. The heart, lungs, nervous system, and abdomen did not show any particular abnormal features. Urine: normal; basal metabolic rate, − 5 per cent.; Wassermann reaction, negative; fractional gastric analysis, achlorhydria; glucose-tolerance tests not completed on several occasions owing to severe vomiting.

Blood count: red blood-cells, 4,288,000; hæmoglobin, 82 per cent.; colour-index, 0·95; white blood-cells, 11,400 (polymorphonuclears 39 per cent., lymphocytes 52·5 per cent., large mononuclears 4·5 per cent., eosinophils 3 per cent., basophils 1 per cent.); slight aniso- and poikilo-cytosis; no nucleated red cells; many platelets. Blood: urea, 112; sugar, 81; phosphates, 4·5; sodium, 285; chlorides, 402 mg. per 100 c.cm. Radiograms: skull, normal; no evidence of tuberculosis in the lungs and suprarenal glands.

On Dec. 15th, 1935, the blood pressure was 60/40, with much asthenia and severe vomiting. He was given 10 c.cm. cortin daily with immediate symptomatic relief but without effect on the blood pressure and blood chemistry. Albumin appeared in the urine (Dec. 21st), systolic blood pressure varied between 54 and 68 mm., and the blood-urea between 110 and 116 mg. Despite the administration of cortin and later eucortone (10–20 c.cm. daily) the urea only fell to 88, and the systolic blood pressure was 50–66 but frequently could not be obtained; albuminuria persisted irregularly, casts appeared later, while the asthenia, pigmentation, and nausea did not improve further. He died on Jan. 26th, 1936, without further response. (Blood: urea, 108; sugar, 91; phosphates, 4·5; sodium, 284; chlorides, 402 mg. per 100 c.cm.; urine contained albumin and casts.)

Autopsy.—Only a few scattered very small remnants of the suprarenals found—neither the shape nor size of normal glands; microscopically there was only a trace of cortex but some medulla was seen. There was no evidence of tuberculosis in the suprarenal glands or other organs. There was a catarrhal gastritis, acute ulcerative enteritis, congestion of liver, kidneys, and pancreas, enlargement of the spleen (100 g.) and thymus. The genitalia were much under-developed.

Surviving Cases

FIFTH CASE

CASE AD/11.—A housewife, aged 26, was admitted to hospital on May 16th, 1934, complaining of abdominal pain, vomiting, progressive weakness, loss of appetite, and increasing pigmentation of the skin. In January, 1934, about two months after a normal pregnancy and parturition, and five months before admission, she began to have attacks of vomiting immediately after taking food, followed by severe abdominal pain commencing at the umbilicus and radiating in the left subcostal region to the middle of the back and below the inferior angle of the left scapula. This latter pain was of moderate severity, not colicky in type, lasting about 10–20 minutes and unrelieved by medicines. These attacks were succeeded by soreness in these areas and feelings of exhaustion. During the last 5–6 weeks, however, the pain had been rather less severe and of shorter duration while the vomiting had only occurred in the mornings. There was no history of hæmatemesis.

Flatulence had been a conspicuous symptom all the time together with headaches and vertigo. The appetite had been poor for three months and there had been some loss of weight. The bowels were constipated—no history of diarrhœa or sore-tongue; there was some nocturnal polyuria. During the three months before admission there had been a progressive muscular weakness with marked lassitude. Since this time there had been a gradual but progressive darkening of the skin. There was no history of cough, sore-throats, or night sweats. The menstrual periods lasted three days every twenty days.

Previous medical history.—Nothing relevant. She had two healthy children 2½ years and 6 months old respectively. The pregnancies were normal and uneventful. There was no previous history of tuberculosis.

Family history.—Her mother died, aged 46, from cardiac muscle failure; her father was well, aged 52; she had no brothers or sisters. There was no tuberculosis in the family so far as could be ascertained. The husband was healthy.

Examination.—A fairly well-nourished small woman with very obvious general dark brown pigmentation, light brown bright eyes; normal intelligence. She was obviously suffering from extreme asthenia. Normally dark brown, the hair was black. Teeth were good; tongue furred and moist; throat and tonsils normal. Pulse 130, poor volume, regular, very easily compressed. Temperature 97°; blood pressure 80/60. Height 4 ft. 9 in. Weight 7 st. 13 lb. The pigmentation was very marked—the skin was almost black in some areas—particularly on the face, round the eyes and mouth, neck, in the axillæ, on the elbows, knuckles, extensor surfaces of the fingers and toes, knees, and mammary areolæ. There were a few pigmented patches on the buccal and vaginal mucous

TABLE III

CASE AD/11 (*abridged results*)*

Date.	Blood pressure.	Treatment.	Weight.	Blood.				
				Urea.	Sugar.	Sodium.	Chloride.	Phosphates.
1934.		Cortin, c.cm.	st. lb.					
May 15	..	..	..	96	88	305	440	5·5
„ 16	80/60	1 iv. 9 im.	..	..	..	..	..	..
„ 17	93/70	20 iv. 30 im.	..	..	..	..	..	..
„ 18	80/64	25 iv. 25 im.	..	..	..	..	..	..
„ 19	80/70	25 iv. 25 im.	..	..	..	..	..	..
„ 20	80/76	20 iv. 20 im.	7 12	..	..	..	..	..
„ 21	82/63	20 iv. 20 im.	..	..	83	..	..	..
„ 22	80/64	30 im.	..	..	..	..	..	..
„ 23	90/64	30 im.	..	92	86	292	428	5·4
„ 24	84/56	20 im.	..	..	..	..	..	..
„ 25	84/60	40 im.	..	..	..	..	..	..
„ 26	90/68	20 im.	..	..	..	..	..	..
„ 27	90/62	20 im.	7 10	..	..	..	..	..
„ 28	90/60	20 im.	..	..	..	..	..	..
„ 29	93/62	20 im.	..	38	90	308	445	4·4
„ 30	86/58	10 im.	..	..	..	..	..	..
„ 31	91/64	10 im.	..	..	..	..	..	..
June 1	94/70	10 im.	..	..	..	..	..	..
„ 2	91/61	10 im.	..	..	..	..	..	..
„ 3	90/60	5 im.	7 10	..	..	..	..	..
„ 4	88/60	5 im.	..	..	..	..	..	..
„ 5	..	5 im.	..	..	..	..	..	..
„ 6	90/60	5 im.	..	..	..	..	..	..
„ 7	94/60	5 im.	..	28	90	320	460	4·3
„ 8	92/62	5 im.	..	..	..	..	..	..
„ 9	92/62	5 im.	..	..	..	..	..	..
„ 10	88/60	5 im.	7 11	..	..	..	..	..
„ 11	..	2·5 im.	..	..	..	..	..	..
„ 12	90/60	2·5 im.	..	..	..	..	..	..
„ 13	88/62	2·5 im.	..	..	..	..	..	..
„ 14	94/62	2·5 im. d.	..	31	86	315	460	4·6
„ 23	90/70	5 im.	..	..	86	..	..	..
„ 24	90/68	5 im.	7 6	..	..	..	..	..
„ 25	92/70	5 im.	..	..	..	..	..	..
„ 26	90/70	10 im. d.	..	45	95	306	442	4·6
July 2	92/68	10 im. d.	7 4	44	95	302	438	4·7
„ 11	88/64	10 im.	7 5	41	100	306	440	4·3
July 12	90/66	Cortin, c.cm. 10 im.	NaCl, g. ..	st. lb. ..	..	..	..	..	..
„ 13	90/65	10 im.	..	..	..	..	..	..	..
„ 14	90/64	10 im.	5	..	..	..	..	..	..
„ 15	85/61	10 im.	5	7 5	..	..	..	..	..
„ 16	88/60	10 im.	10	..	..	..	..	..	..
„ 17	92/63	10 im.	10	..	..	..	..	..	..
„ 18	92/66	10 im.	10	..	..	..	..	..	..
„ 19	93/70	10 im.	10	..	..	..	..	..	..
„ 20	92/60	10 im.	10	..	22	88	328	465	3·8
„ 21	90/58	10 im.	15	..	..	..	..	..	..
„ 22	90/60	..	15	7 9	..	..	..	..	..
„ 23	100/68	10 im.	15	..	..	..	..	..	..
„ 24	94/62	..	15	..	..	..	..	..	..
„ 25	93/61	10 im.	15	..	..	..	..	..	..
„ 26	94/64	..	15	..	..	..	..	..	..
„ 27	99/69	10 im.	15	..	..	..	..	..	..
„ 28	96/66	..	15	..	..	..	..	..	..
„ 29	92/60	10 im.	15	7 11	..	..	..	..	..
„ 30	92/60	..	15	..	..	..	..	..	..
„ 31	92/58	5 im. alt. days.	15 d.	..	20	90	330	465	3·7
Aug. 6	100/60	5 im. every 3rd day.	15 d.	7 10	..	..	..	..	..
„ 10	102/60	5 im. every 3rd day.	15 d.	7 10	20	90	330	475	3·7
„ 16	108/70	Cortin stopped.	15 d.	7 12	20	91	328	475	3·7
„ 22	104/70	5 im. once.	15 d.	..	..	..	..	..	..
„ 23	100/65	Nil.	15 d.	..	23	82	328	485	3·9
Sept. 5	100/76	5 im. once.	15 d.	..	..	..	..	..	..
„ 19	98/65	5 im. weekly.	15 d.	8 4	20	109	330	492	3·7
Oct. 16	100/68	5 im. weekly.	15 d.	..	20	..	328	495	3·6
Nov. 27	104/70	Cortin stopped.	15 d.	..	20	95	328	495	3·5
1935.									
Mar. 26	104/70	Nil.	15 d.	7 8	23	84	328	490	3·8
May 31	104/70	Nil.	15 d.	7 8½	20	82	328	486	3·1
Aug. 15	100/66	Nil.	15 d.	7 9	22	82	328	460	3·7
1936.									
Jan. 7	122/88	Nil.	15 d.	8 0	20	90	330	492	3·3
April 22	104/22	Nil.	15 d.	8 0½	18	81	327	468	3·4
Dec. 5	96/80	Nil.	15 d.	8 0	..	..	..	..	..
1937.									
June 12	110/75	Nil.	15 d.	..	..	..	..	..	..

membranes. There were darker pigmented spots on the dorsum of the arms and hands. The rest of the body showed a deep brown generalised pigmentation.

Abdomen: there was a diffuse tenderness especially round the umbilicus, but nothing was felt. The liver, kidneys, spleen, and lymphatic glands were not enlarged. Heart: not enlarged, apex-beat not palpable, sounds distant, no bruits. Lungs: appeared to be normal. Nervous system: nervous and pupillary reflexes normal. Urine was normal; Wassermann reaction was negative;

URINE: *Daily Chloride Excretion (g.)*

July 13: 2·3	July 19: 9·5	July 26: 17·1	Aug. 6: 16·2
„ 14: 2·9	„ 20: 10·6	„ 27: 17·0	„ 10: 16·5
„ 15: 3·9	„ 21: 8·6	„ 28: 16·5	„ 16: 16·7
„ 16: 6·5	„ 22: 8·0	„ 29: 16·0	„ 22: 16·6
„ 17: 7·0	„ 23: 9·0	„ 30: 16·6	„ 23: 18·6
„ 18: 7·8	„ 25: 17·6	„ 31: 15·1	Nov. 27: 10·6

* This Table is much abridged. The patient was seen daily until August 26th, 1934, when discharged from hospital. From that time she has attended weekly and later fortnightly at my clinic up to the present time (June, 1937). d. = daily.

blood-urea, 96; blood chloride, 440; serum sodium, 305; serum phosphates, 5·5; blood-sugar, 83 mg. per 100 c.cm.

Blood count (May 16th, 1934) was as follows: red cells, 4,860,000; hæmoglobin, 88 per cent.; colour-index, 0·95; white cells, 8200 (polymorphonuclears 45·5 per cent., lymphocytes 44 per cent., large mononuclears 7 per cent., eosinophils 2·5 per cent., basophils 1 per cent.); slight aniso- and poikilo-cytosis; no nucleated red cells; platelets abundant. Fractional gastric analysis showed achlorhydria. Basal metabolic rate was diminished by 5 per cent. Radiological examination of the chest was negative; there was a faint shadow over the upper pole of the right kidney—? calcification of suprarenal gland. Sugar-tolerance tests after 50 g. glucose were:—

	1934—May 21st.	July 5th.	Aug. 24th.
Fasting sugar ..	0·083	0·091	0·082
½ hour	0·152	0·152	0·121
1 ,, ...	0·081	0·152	0·121
1½ hours	0·087	0·101	0·109
2 ,, ...	0·104	0·145	0·107
2½ ,, ...	0·118	0·123	0·103
Glycosuria ..	slight	slight	Nil.

The results of the investigations carried out during treatment are shown in Table III.

Treatment.—For the first few days after admission the patient had severe attacks of nausea and vomiting, but after intensive treatment with cortin she gradually picked up and showed a marked general clinical improvement. The gastro-intestinal symptoms disappeared and there was a slow but progressive diminution in the pigmentation to a moderate brown colour—this has slowly improved since. The blood pressure increased slightly but the weight fell for the first seven weeks, after which the loss was regained (Table III). The subnormal temperature rose to normal levels after about 7 to 8 weeks.

On July 14th sodium chloride was added to the diet in doses of 5 g. and then 10 g. daily. This was increased to 15 g. on July 21st. It will be noted that, before this salt treatment was commenced, the daily excretion of sodium chloride was about 2–3 g. but this excretion increased to 15–18 g. with the added salt diet. It is possible that this added salt may have influenced the increase in weight and the return to normal temperature. The blood analyses showed an increase in the chlorides and sodium contents.

Since discharge from hospital, the patient has continued to attend my clinic at weekly and later fortnightly intervals. She remained perfectly well during that time, and the cortin was gradually reduced, until the last dose of 5 c.cm. on Nov. 27th, 1934. Since that time she has not had any further suprarenal cortical extract, but has continued to take 15 g. of salt daily. When last seen she remains in perfect health (June, 1937), and although her general colour is still a light brown the colour is much less than originally. She does not complain of any symptoms. Her weight is 8 st. and she does all her own housework without fatigue.

SIXTH CASE

CASE AD/12.—A housewife, aged 40, had scarlet fever and otitis with subsequent deafness (1904), shingles and influenza (1917), normal pregnancy (1924), appendicectomy (1926), and had been treated for several years for her gastro-intestinal disturbances. In 1931 she was first diagnosed as suffering from Addison's disease, receiving suprarenal cortical extracts at intervals with benefit. She had not had any for four months before admission to the Manchester Royal Infirmary on Oct. 11th, 1934, when she complained of recurrent attacks of nausea, vomiting, indigestion, flatulence, vertigo, headaches, weakness, loss of appetite, weight, and energy, palpitation, brown pigmentation of the skin, and constipation.

Examination showed moderate asthenia, slight wasting, and typical distribution of brown pigmentation in skin and mucous membranes. Blood pressure, 95/65; pulse, 64, regular, soft; temperature, 98° F.; weight, 7 st. 3 lb.; height, 5 ft. 2 in; marked koilonychia. There was nothing of particular note in the heart, chest, abdomen, and nervous system. Urine, normal; glucose-tolerance curve normal; basal metabolic rate decreased by 1 per cent.; Wassermann reaction, negative; fractional gastric analysis: free hydrochloric acid titres were 25 (0 hr.); 4·5 (½ hr.); 4 (½ hr.); 14 (¾ hr.); 17 (1 hr.); 6·5 (1¼ hr.); 22 (1½ hr.); 25 (1¾ hr.) c.cm.

Blood count: red blood-cells, 4,030,000; hæmoglobin, 80 per cent.; colour-index, 1; white blood-cells, 9000 (polymorphonuclears 62 per cent., lymphocytes 28·5 per cent., large mononuclears 4 per cent., eosinophils 5 per cent., basophils 0·5 per cent.); slight aniso- and poikilocytosis; platelets abundant; no abnormal cells or staining. Blood chemistry: urea, 34; sugar, 80; phosphates, 3·8; sodium, 324; chlorides, 480 mg. per 100 c.cm. Radiograms of chest showed some fine mottling in the right apex, suggestive of tuberculosis. There was marked calcification in the costal cartilages, but no evidence of calcification in the suprarenal areas.

Treatment.—Having been under observation without treatment for 15 days, and during salt administration (15 g. daily) for a further 30 days without any improvement, she was given eucortone intramuscularly: 5 c.cm. did not give complete relief but 10 c.cm. daily was sufficient to produce good improvement in her symptoms and very marked fading of the brown pigmentation. The systolic blood pressure range increased slightly from 85–95 to 90–105 mm.; her weight remained about 7 st., the blood chemistry was normal and she was discharged on Dec. 18th, 1934, with instructions to take 15 g. of salt daily. She later discontinued this, remained well until June, 1935, when she relapsed. Her condition then was similar to that when first seen—blood pressure 94/60; weight, 7 st.; blood chemistry not significantly altered. She was given 15 g. salt daily and then cortin 5 c.cm. intramuscularly monthly with an excellent response. On Jan. 31st, 1936, she had blood pressure 110/64; weight, 7 st.; normal blood chemistry; practically no pigmentation or asthenia. On Jan. 13th, 1937, she had maintained her improvement; blood pressure 110/80; weight, 7 st. 8 lb.; normal blood chemistry.

SEVENTH CASE

CASE AD/18.—A male presser, aged 36, was admitted to hospital complaining of weakness, loss of weight, flatulence, dyspepsia, nausea, vomiting, epigastric pain, and very marked pigmentation of the skin and mucous membranes. The latter had become much greater after a bilateral cervical sympathectomy which had relieved the symptoms of Raynaud's disease from which he was suffering. There was nothing else of note in his previous medical or family histories.

Examination.—Asthenia; some wasting; dark brown pigmentation of skin, mucous membranes, and almost black in old operation scars. There was some scleroderma of hand, face, neck, and old healed and partially healed ulcers on the pulps of the fingers. Weight, 8 st. 3 lb.; blood pressure, 100/65; pulse, 76, regular and soft; temperature, 97° F. The heart, lungs, and nervous system were normal. Urine normal; basal metabolic rate decreased by 2 per cent.; glucose-tolerance test normal; Wassermann reaction negative; fractional gastric analysis: 8 (0 hr.); 5 (½ hr.); 10 (½ hr.); 12 (¾ hr.); 14 (1 hr.); 14 (1¼ hr.); 11 (1½ hr.); 5 (1¾ hr.); 8 (2 hr.); 7 (2¼ hr.) c.cm. Blood count: red blood-cells, 3,896,000; hæmoglobin, 96 per cent.; colour-index, 1·23; white blood-cells, 8000 (polymorphonuclears 67·5 per cent., lymphocytes 28 per cent., large mononuclears 2 per cent., eosinophils 2·5 per cent., basophils nil); slight aniso- and poikilo-cytosis; no nucleated red cells; platelets fairly abundant. Blood chemistry: urea, 38; sugar, 100; phosphates, 4·1; sodium, 332; chlorides, 454 mg. per 100 c.cm. Radiological examinations did not disclose any evidence of tuberculosis in the chest or suprarenals.

Treatment.—He was given 5 c.cm. eucortone intramuscularly daily for one week and thereafter on alternate days. He improved very rapidly, gastro-intestinal symptoms disappeared, appetite and weight increased, but the blood pressure remained unaltered. The pigmentation was slightly less obvious, and he was discharged after five weeks with a normal blood count, basal metabolic rate, and blood chemistry. He has attended my clinic at irregular intervals, but does not receive any treatment and maintains his improved condition although there has not been any further improvement in the pigmentation. His blood chemistry is normal.

This patient appears to have a very chronic, benign type of Addison's disease.

EIGHTH CASE

CASE AD/23 (partially described in *The Lancet*, 1936, **2**, 967).—A housewife (aged 32) was admitted to hospital on Jan. 14th, 1936, complaining of extreme weakness, loss of energy, backache, progressively increasing pigmentation of the skin. She had lost weight, and had had occasional attacks of vomiting.

Examination.—Slimly built (weight 7 st. 12 lb.); moderate asthenia; pulse 72, regular; blood pressure, 125/75 (on admission). There were old scars in left upper cervical and submastoid regions from excision of old tuberculous glands in childhood. Dark brown pigmentation of skin and mucous membranes of typical distribution.

Urine normal; basal metabolic rate, −2 per cent.; Wassermann reaction, negative; fractional gastric analysis 24 (0 hr.); 4 (½ hr.); 9·2 (¼ hr.); 9 (¾ hr.); 7 (1 hr.); 12 (1½ hr.); 17 (1½ hr.) c.cm. Glucose-tolerance curve: 77 (0 hr.); 120 (½ hr.); 112 (1 hr.); 100 (1½ hr.); 100 (2 hr.) mg. per 100 c.cm. Blood count: red blood-cells, 4,960,000; hæmoglobin, 93 per cent.; colour-index, 0·93; white blood-cells, 12,600 (polymorphonuclears 47·5 per cent., lymphocytes 46·5 per cent., large mononuclears 6 per cent., eosinophils nil, basophils nil); slight aniso- and poikilo-cytosis; no nucleated red cells; platelets diminished somewhat in numbers. Blood: urea, 24; sugar, 77; phosphates, 3·8; sodium, 330; chlorides, 460 mg. per 100 c.cm. Radiograms: chest negative; loins showed an irregular calcification at the upper pole of the left kidney with slight extension along the outer border; faint trace of calcification above the upper pole of the right kidney.

Treatment.—After admission to hospital, pigmentation increased, the systolic blood pressure fell to 95–105 mm. and the weight to 7 st. 6 lb. without gross changes in the blood. From Feb. 1st, 1936, she was given 10 c.cm. cortin twice daily, then once daily until Feb. 23rd, when it was reduced to 5 c.cm. daily, and later alternate days. Her weight gradually increased, the pigmentation became less, she felt much stronger and was free from symptoms. The interval between doses of cortin was gradually increased and she was discharged on April 9th, 1936 (blood chemistry normal; weight, 8 st. 3¾ lb.; blood pressure, 108/70), being instructed to take 15 g. salt and lemon or orange juice daily.

Since then she has regularly attended my clinic, has continued to improve, taking salt 7·5–15 g. daily. Cortin (2·5–5 c.cm.) was given about once per fortnight until August, 1936, when it was discontinued entirely. On June 5th, 1937, she was in excellent health; blood pressure, 124/85; weight, 8 st. 12 lb.; normal urine and blood chemistry; the brown pigmentation had disappeared completely from the mucous membranes and was much less obvious in the skin—the knees, knuckles, areolæ being rather browner than normal.

NINTH CASE

CASE AD/24 (see *The Lancet*, 1936, **2**, 967).—A housewife, aged 48, was admitted to hospital on Nov. 14th, 1935, complaining of severe asthenia, rapidly increasing pigmentation, pain in the back and occiput, constipation, loss of appetite, flatulent dyspepsia, nausea, occasional vomiting, and very marked loss of weight (4 st. in less than 12 months).

Examination.—Asthenia. Considerably emaciated so that there was extreme redundancy of the abdominal skin. Weight, 7 st. 12½ lb.; pulse 92, regular, fair volume; blood pressure, 120/70. The pigmentation of skin and mucous membranes was the most marked of the whole series of cases, being a dark mahogany to black at pressure points. There were no abnormal features in the heart, lungs, nervous system, abdomen.

Urine normal; basal metabolic rate increased by 4 per cent.; Wassermann reaction negative; fractional gastric analysis, achlorhydria; glucose-tolerance test: 77 (0 hr.); 95 (½ hr.); 113 (1 hr.); 105 (1½ hr.); 100 (2 hr.); 91 (2½ hr.) mg. glucose per 100 c.cm. Blood count: red blood-cells, 5,270,000; hæmoglobin, 96 per cent.; colour-index, 0·91; white blood-cells, 5600 (polymorphonuclears 41·5 per cent., lymphocytes 46·5 per cent., large mononuclears 9 per cent., eosinophils 2·5 per cent., basophils 0·5 per cent.); slight aniso- and poikilo-cytosis; no nucleated red cells; platelets fairly abundant. Blood chemistry: urea, 20; sugar, 81; phosphates, 4; sodium, 328; chlorides, 460 mg. per 100 c.cm. Radiograms of chest and suprarenal glands were normal.

Treatment.—After admission her blood pressure fell to 105/65 remaining about that level. Cortin was commenced on Nov. 23rd, 1935, with 10 c.cm. daily, increased to 20 c.cm. for a few days and then reduced to 10 c.cm. again. The blood-urea was 24 mg.; the blood pressure was unchanged but she lost more weight. By Jan. 25th, 1936, however, she was putting on weight, pigmentation was much less obvious, blood chemistry and basal metabolic rate were within normal limits. The dose of cortin was gradually reduced to 5 c.cm. on alternate days and she was then given salt (15 g. daily). She was discharged from hospital on Feb. 12th, 1936, considerably improved (weight, 8 st. 3½ lb.; blood pressure, 135/75; basal metabolic rate and blood chemistry normal). She has attended my clinic regularly since then, the cortin being gradually reduced and finally discontinued (August, 1936); she takes 7·5 g. salt daily and in January, 1937, was very fit and well and free from symptoms; (blood pressure, 145/85; weight, 8 st. 8 lb.) The pigmentation is very much less. Throughout the period her temperature has varied only slightly between 97°–98·4° F. rising to 99° F. on three occasions.

Discussion of Results

DOSAGE OF EXTRACTS

Intravenous and intramuscular routes were used, the former being less unpleasant for the patient especially with the larger volumes of extract. As indicated above, the doses were usually divided when the total daily amount was over 10 c.cm., but not necessarily so when less than 10 c.cm. Daily doses varied from 2·5 c.cm. up to a maximum of 50 c.cm. in crises.

The impression gained from this work is that better results are obtained when the daily dose is divided into three or four portions and given at intervals during the 24 hours rather than in a single dose.

No reactions were noted in any of these patients after the use of these extracts, and there does not appear to be any need for a small preliminary test dose before giving the large quantities required in a crisis. In the case of certain batches of one cortical extract some local pain was experienced after intramuscular injection—this was completely eliminated by suitable change in the *p*H of the extract as a result of the tests made for the Therapeutic Trials Committee.

It will be clear from the case notes that very large doses of suprarenal cortical extract (up to 40 or 50 c.cm. daily) may be required in the initial stages of treatment, and since it may be necessary to continue these for long periods the cost of treatment may be heavy.

By reference to Table IV it will be seen that the total amounts of cortical extracts used on these nine cases were 65, six between 140–605, 940, and 3015 c.cm. respectively. With satisfactory responses to treatment and especially after the addition of sodium chloride (15 g. daily) to the diet, it was usually possible to reduce the maintenance dose of cortical extract very rapidly and ultimately to discontinue it entirely. This is well illustrated in the Tables and case notes.

The return of sudden crises with pyrexia as in cases AD/8 and AD/9, and the failure of cortical extract to initiate further remissions even in large doses in these cases would appear to favour the

suggestion of Hartman and Winter (1933) that an irreversible condition may sometimes develop and account for the fatalities.

TABLE IV

Case.	Total amount of cortical extract given.	Present maintenance treatment.	Length of survival since beginning of treatment (months), June, 1937.	Suprarenal gland.	Present condition.
	(c.cm.)				
AD/ 8	450	—	1	Tb.	Dead.
AD/ 9	465	—	1	Tb.	Dead.
AD/11	940	Salt (15 g.)	37	—	Alive, very well.
AD/12	140	Salt (15 g.)	32	—	
AD/18	65	Nil.	34	—	
AD/22	3015	—	8	Atrophy.	Dead.*
AD/23	345	Salt (15 g.)	17	—	Alive, very well.
AD/24	605	Salt (15 g.)	19	—	
AD/25	480	—	2	Atrophy.	Dead.

* Cardiac failure and auricular fibrillation.

SURVIVAL

Of the nine cases eight showed satisfactory responses to suprarenal cortical extracts at first, but ultimately four died in hospital after periods of 4, 4, 32, and 8 weeks respectively; at the present time (June, 1937) five are alive and very well after periods of 37, 32, 34, 17, and 19 months respectively. These now take only maintenance doses of salt (7·5–15 g. daily) without cortical extracts and are all in good health showing steady improvement. The ultimate outlook for these patients cannot of course be other than speculative, but the remarkable responses suggest the possibility of some improvement in suprarenal secretory function.

Autopsies were carried out on the four fatal cases; in two (AD/8 and AD/9) the suprarenal glands were almost completely replaced by tuberculous or calcified material; radiological examination had detected calcification shadows in AD/8 only. The other two (AD/22 and AD/25) showed atrophied glands in which hardly any cortex could be identified. There was no evidence of gland regeneration in these four cases.

When considering the cause of death of these four patients it appears probable that three of them died as a result of the destruction or atrophy of the suprarenal glands and ultimate failure of treatment with suprarenal cortical extracts to supply sufficient of the cortical hormone to maintain life; it may be that case AD/25 did not receive enough extract and had larger doses of say 40–50 c.cm. been given daily a remission might have been produced.

The fourth, case AD/22, certainly died from cardiac muscle failure following acute auricular fibrillation at the time that the Addison's disease was in remission and under good control. She had received in all over three litres of suprarenal cortical extract.

ASTHENIA

The gradual disappearance of general asthenia, muscular weakness, feeling of exhaustion, and apathy under the influence of the suprarenal cortical extracts was very striking in eight of the patients, while the ninth (AD/25) showed it to a less extent since his condition was never adequately under control. These changes were always followed by a rapid improvement in the mental attitude of the patient. When crises occurred these symptoms tended to return if prompt measures were not taken.

GASTRO-INTESTINAL DISORDERS

All the patients suffered at some period from disorders of the alimentary tract—usually loss of appetite, nausea, and vomiting, but less frequently flatulent dyspepsia, diarrhœa, or severe constipation.

It is interesting that five had achlorhydria, three hypochlorhydria, and only one (AD/12) presented a normal gastric secretion—this patient had the longest history and was the least pigmented of the series. These digestive symptoms were very rapidly relieved in the course of a few days by adequate cortical extract therapy, and appetite returned to normal proportions—in some cases even becoming excessive. The onset of a crisis was always heralded clinically by loss of appetite, nausea, and vomiting, and served as a sharp warning that urgent treatment was required; further, the rapid relief of these symptoms indicated the possibility of reducing a large dose of extract—a matter of some practical importance.

This rapid response to adequate treatment with cortical extracts will be of great value in routine treatment since it has proved almost impossible to give salt orally to the acutely ill cases until the gastro-intestinal symptoms have been relieved. This was the position with patient AD/25 who never really responded to the cortical extracts sufficiently to get a relief from nausea and vomiting for more than 48 hours at a time. In case AD/12 the administration of salt first did not relieve the digestive symptoms which promptly responded to suprarenal cortical extract. (It is worth mentioning when considering these gastro-intestinal symptoms that another case not included in this series was ultimately found to have both a gastric and a duodenal ulcer.)

PIGMENTATION

It is now accepted that although pigmentation is usually noted in Addison's disease it is not always present (2 of the 9 rejected cases were not pigmented although the diagnosis was confirmed).

However, in this series pigmentation was one of the essential points in selection so that all the cases showed it clearly. All the nine cases showed much improvement after the administration of cortical extracts and the lessening of the brown coloration of the skin continued in the patients who survived even after the cortical extracts had been stopped and salt continued as the only maintenance therapy. When crises recurred the pigmentation also increased again but the amount depended upon the rapidity with which the crises developed. Thus, cases AD/8 and AD/9 became more pigmented during their final crises than AD/22 who died, in a remission, following a sudden heart attack.

The five surviving patients have shown a rapid disappearance of the pigmentation from the mucous membranes, but that of the skin is much more persistent while there has not been any detectable change in the colours of the hair and eyes. As case AD/22 improved she developed a very marked desquamation of the skin, a condition which was noted to a less degree in cases AD/11, AD/23, and AD/24.

TEMPERATURE

The whole series of patients had subnormal temperatures lying between 97°–98° F. Two (AD/8, AD/9) had pyrexia at the times of their crises and tuberculous glands were found at autopsy; the

temperatures of cases AD/11, AD/18, AD/23, and AD/24 were between 97°–98° F., but gradually showed a slight rise to 98°–98·4° F. when stabilised on cortical extracts. Patients AD/22 and AD/25 were usually between 97°–98° F., but on about six occasions in 8 months AD/22 had slight pyrexia over 99° F.; she ultimately had a very constant temperature of 97·8°–98·2° F. during the last eight weeks of life.

From this small series of cases it appears probable that the occurrence of pyrexia in Addison's disease is a bad prognostic sign and is more commonly seen in and reaches higher levels in those of tuberculous origin. Very large doses of cortical extract must be given to these cases when crises are imminent, together with salt therapy if possible.

BASAL METABOLISM.—WEIGHT

The basal metabolic rates were within normal limits and were not affected significantly by treatment.

A gain in weight is considered to be a good sign but it was noticed that there was often a time-lag between the onset of good remissions and the appearance of a weight increase so that loss of weight was often noted in cases commencing remissions. The weight evidently does not furnish a very sensitive index of the changing condition of the patient, although as a gross confirmatory sign it has its place.

BLOOD PRESSURE

In some cases an initial low blood pressure may not always be noted. There is also general agreement that the blood pressure does not show much alteration after treatment with cortical extracts. In this series, one case (AD/23) on admission had a systolic pressure of 110–125 for some days but this rapidly fell to around 95–100 mm.; after treatment with cortical extract and salt the blood pressure now is about 120–130. Two cases (AD/18, AD/24) had pressures of 100–105 mm., the former has remained unaltered but the latter after about three months showed an increase in level around 110–124, and more recently has risen to 145 mm. Case AD/12 initially around 95–100 mm. has shown some general increase to 100–112, while case AD/11, originally 80–90 mm., increased to 90–100 mm. after about three months and recently has been as high as 122 mm. Three had systolic blood pressures between 70–80, but only case AD/22 showed any rise in systolic pressure to 95–100 mm. after treatment. One (AD/25) varied about 60 mm., was frequently less, and many times could not be determined—there was no response to treatment in this fatal case.

There appears no doubt at all that there was little change in the blood pressures after several months in most of my cases treated with suprarenal cortical extracts alone, but with the addition of salt was followed by increases in the general levels of the blood pressures (cases AD/11, AD/12, AD/23, AD/24—AD/22 had only small irregular amounts of salt). Similarly when salt was given first, as in case AD/12, a significant increase was not noted until suprarenal cortical extract was given.

Those cases not receiving salt (AD/8, AD/9, AD/18, and AD/25) did not show any significant increases in blood pressure, but it may be that AD/8, AD/9, and AD/25 did not survive long enough.

CHANGES IN BLOOD AND URINE

Blood-sugar and carbohydrate tolerance.—Various statements have been made by different observers as to the state of the blood-sugar—some describing hypoglycæmia as a constant feature, others finding no abnormalities. None of my cases had very low blood-sugars when examined regularly.

Glucose-tolerance tests were carried out on seven patients—in some cases being repeated before, during, and after treatment. On account of nausea and vomiting two cases failed to keep down the glucose on several occasions; of the other seven, three gave normal results, while three displayed an increased and one a decreased carbohydrate tolerance. There was no obvious change under treatment while the patients were in hospital.

Blood chemistry.—The chemical changes in the blood in Addison's disease are of considerable importance and have received much attention more particularly in the last two years, since the significance of the sodium and chloride levels were appreciated following the work of Baumann and Kurland (1926), Marine and Baumann (1927), Loeb and others (1932, 1933). The recent paper by Allott (1936) gives his results in eight cases, and summarises the main chemical changes in the blood in suprarenal insufficiency. These included a fall in sodium and chloride contents of the serum, an increase in the potassium, magnesium and phosphates, and a rise in the blood-urea and non-protein nitrogen.

In my nine cases the blood changes were not so constantly abnormal as Allott found, and some of them had little alteration from the normal (cp. Cases 12, 18, 23, 24); it has been my experience that the blood changes cannot be used as diagnostic criteria in very early cases of Addison's disease. This will not be considered further here since I am only concerned with the effects of suprarenal cortical extracts on these constituents of the blood. Throughout these clinical investigations the changes in the urea, sodium, chlorides, and phosphates were utilised as additional but subsidiary guides for treatment and dosage—the urea estimation proving the most sensitive chemical index.

Those cases, in which remissions were initiated by adequate treatment with cortical extracts, showed rapid improvements in the chemistry of the blood—the most striking being the quick return of the blood-urea to normal, followed rapidly by improvement in the sodium, chloride, and phosphate values. The five cases now in very good health have normal blood constituents at the present time. The persistence of a high blood-urea was indicative of inadequate treatment, while a progressive rise in the urea called for immediate and urgent measures.

Hæmatology.—All these patients had regular blood counts; three had normal blood pictures, and six suffered from slight hypochromic microcytic anæmia. Iron treatment was purposely omitted for this during the whole of the test period in hospital and no improvement was noted following the use of cortical extracts, or salt. No eosinophilia was noted in this series before or after treatment with cortical extracts.

Urinary changes.—Simultaneously with a rising blood-urea and non-protein nitrogen during the commencement of a crisis urinary changes were noted. Albuminuria appeared first, and this was rapidly followed by the appearance of casts, red cells, and leucocytes. When suprarenal cortical extract was given in sufficient amount to cause a remission the urine promptly returned to normal often within 48 hours.

Summary

1. The value of suprarenal cortical extracts in the treatment of Addison's disease has been investigated

on behalf of the Therapeutic Trials Committee of the Medical Research Council.

2. Nine patients with typical uncomplicated Addison's disease and two standard commercial suprarenal cortical preparations (cortin and eucortone) have been used for these tests.

3. Four of the patients died despite intensive treatment—three from Addison's disease and one, in remission, from cardiac muscle failure following auricular fibrillation. Two of these showed tuberculosis and two complete atrophy of the suprarenal glands.

4. Five patients have responded to treatment very well and are alive and in good health, the longest period of survival to date being 3 years 1 month, and the shortest 19 months. One was a chronic case of moderate severity—not now taking treatment—and four were acute severely ill cases who responded to cortical extracts and are now on daily maintenance doses of sodium chloride.

5. Large doses of cortical extract have often been required, they are safely given intramuscularly or intravenously and are free from unpleasant reactions. After satisfactory responses the dose can be reduced considerably, while combined with salt therapy even greater reductions in dosage can be made. The maximum total amount of cortical extract given to any one patient during treatment was three litres, while the minimum total amount required has been 65 c.cm.

6. Using these cortical extracts symptoms of asthenia, muscular weakness, digestive disorders (particularly nausea and vomiting and diarrhœa) are promptly relieved; appetite returns, weight increases, mental outlook improves, pigmentation slowly fades.

7. There is a slight improvement in the subnormal temperature after cortical extracts but the occurrence of pyrexia is a bad prognostic sign and even very large doses of cortical hormone may be unavailing.

8. The blood pressure may take two or three months to show any significant improvement, and then apparently only if cortical extracts are given with or followed by sodium chloride therapy.

9. Changes in the chemistry of the blood and urine show rapid responses to adequate amounts of suprarenal cortical extracts. A high blood-urea returns quickly to normal, with a simultaneous disappearance of albumin, casts, and cells from the urine; while sodium, chlorides, and phosphates return to normal values in the blood.

10. Suprarenal cortical extract has no effect on the slight hypochromic microcytic anæmia frequently present, while the basal metabolic rate is also unaltered.

11. Suprarenal cortical extracts are of very definite value in the treatment of Addison's disease if given in adequate dosage. It is the only treatment of any real value in acute crises. In my series reported here, five out of nine cases have had excellent remissions and are practically in normal health now as a result of this treatment. One case also lived eight months by its use but died from another cause during a period of steady remission. Two others were temporarily improved until sudden crises with pyrexia failed to respond to further treatment.

My thanks are due to the physicians of the Manchester Royal Infirmary for their help in the collection and accommodation of this group of cases in their wards for long periods. I am glad to acknowledge the valuable help of Dr. W. Susman, who carried out the four autopsies, reports of which have been included in this paper; Mr. H. Varley, M.Sc., for his assistance with biochemical estimations, and other members of my staff who have helped with the large amount of investigational work and collection of the necessarily large mass of data in this inquiry.

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TREATMENT OF CUSHING'S SYNDROME WITH LARGE DOSES OF ŒSTRIN

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IT is becoming increasingly difficult for the clinician to pick his way through the fog of conflicting evidence that has accumulated regarding the effect of œstrin on the anterior lobe of the mammalian pituitary gland. Zondek (1936), Spence (1936), and Jones and MacGregor (1936), in their recent papers, have dealt exhaustively with the vast literature on the subject, and Zondek is of the opinion that the varying experimental results obtained by the many workers they quote are due largely to variation in dose and duration of treatment, small doses having a stimulant, large doses a depressant, action. Several years ago both Zondek (1931) and Fluhmann (1931), using œstrin, were able to obtain an inhibitory effect on the human anterior pituitary, and their results led to the trial of the hormone as a therapeutic weapon. Frank and Salmon (1935) showed that œstrin could inhibit the gonadotropic hormone in women at the menopause and Jones, MacGregor, and Tod (1937) have now applied this with resulting symptomatic relief in menopausal depression. Spence (1936) has attempted to depress thyroid activity via the anterior pituitary in thyrotoxicosis, but without success, and Cookson (1936) was also unable to obtain benefit in the same condition. It seemed to me that, if an inhibitory effect could be produced on the secretion of the basophil cells of the anterior pituitary, some relief might follow in those cases of Cushing's syndrome thought to be the result of pituitary basophilism. This paper records the trial of large doses of œstrin as a therapeutic measure in the treatment of three such cases.

FIG. 1 (Case 1).—Showing distribution of hair and obesity.

CASE REPORTS

CASE 1.—A female, aged 15, first attended the out-patient department of the Middlesex Hospital in April, 1936, at the age of 14, complaining of lassitude and severe frontal headaches of some two years' duration. Although her periods had not yet begun the secondary sex characters were fully developed.

On examination she showed obesity, her weight being over 12 st.; hypertrichosis, with pubic hair of masculine distribution (Fig. 1); abdominal striæ; an enlarged clitoris; and hypertension, the blood pressure varying between 140/85 and 155/100 mm. Hg. Routine clinical neurological examination, radiograms of the pituitary fossa, and examination of the visual fields and optic fundi revealed no abnormality. A sugar-tolerance test, however, showed a flat curve with a low renal threshold, and the basal metabolic rate was minus 32. The blood Wassermann reaction was negative. Radiograms of the long bones and of the abdomen and a retrograde pyelogram were all normal, and the blood figures for urea, non-protein nitrogen, and cholesterol were within normal limits. A blood count showed 105 per cent. of hæmoglobin and 5,420,000 red cells.

FIG. 2 (Case 2).—Showing hypertrichosis.

Treatment.—A laparotomy was performed by Mr. Vaughan Hudson: no adrenal or ovarian tumour was found and the uterus was infantile. After the operation she continued to attend the out-patient department, her headaches and lassitude remaining unaltered. On Nov. 2nd she was given 100,000 international benzoate units of Progynon B. Oleosum forte (Schering) intramuscularly, and thereafter the injections were continued daily, the dose rising to 200,000 units on Nov. 9th and remaining thus until Dec. 21st. The duration of treatment was 50 days and the total dose given was 9,300,000 units.

Result.—The treatment had no effect on the obesity, hypertrichosis, abdominal striæ, amenorrhœa, or hypertension. She felt much better, however, and during the 50 days she had only five headaches, as opposed to a previous average of five a week. Two weeks after cessation of treatment she menstruated but there have been no further periods. Six weeks after the last injection her lassitude and headaches returned and although these are not so severe as formerly they are quite as frequent.

CASE 2.—A female, aged 40, came to the out-patient department in November, 1936, complaining of lassitude, backache, and severe headaches of four months' duration. There was a history of eclampsia during the first pregnancy but she had since had two normal confinements. Her periods had recently become irregular.

On examination she showed obesity, her weight being nearly 13 st.; hypertrichosis (Fig. 2); abdominal striæ; and hypertension, the blood pressure ranging from 165/100 to 180/120 mm. Hg. Routine clinical neurological examination, the visual fields and optic fundi, a sugar-tolerance curve and radiograms of the pituitary fossa were all normal. The basal metabolic rate was minus 10, the blood figures for urea, non-protein nitrogen, and cholesterol were within normal limits, and a blood count showed 100 per cent. of hæmoglobin with 4,740,000 red cells. A plain radiogram of the abdomen revealed no abnormality. She was given a course of deep X ray therapy to the pituitary and her headaches were somewhat improved while her periods became more regular. After this she continued to attend out-patients and from March to November, 1936, her backache and headaches became increasingly severe.

FIG. 3 (Case 3).—Radiogram showing small pituitary fossa.

Treatment.—From Nov. 9th to Dec. 21st she was given 200,000 international benzoate units of progynon daily by the intramuscular route, receiving in all 8,600,000 units over a period of 43 days.

Result.—There was no effect on the obesity, hypertrichosis, abdominal striæ, or hypertension, but her backache and lassitude were considerably improved and her headaches vanished. She ceased to menstruate during treatment and there has been no period since. Some five weeks after her last injection her headaches and backache returned and are now as bad as ever.

CASE 3.—Since the age of 11 this patient, a female aged 22, has become increasingly stout and her weight in December, 1936, was 12½ st. She complained of lassitude, backache, and frontal headaches of six months' duration. Her periods were scanty and irregular.

On examination she showed obesity; hypertrichosis; abdominal striæ; and hypertension, the blood pressure varying between 140/90 and 150/100 mm. Hg. Routine clinical neurological examination, a sugar-tolerance curve, and examination of the visual fields and optic fundi showed no abnormality, but a radiogram of the skull revealed a small pituitary fossa (Fig. 3). The basal metabolic rate was plus 3. The blood figures for urea, non-protein nitrogen, and cholesterol were within normal limits, and a blood count showed 95 per cent. of hæmoglobin with 4,100,000 red cells. A plain radiogram of the abdomen was normal. After her discharge from hospital she attended out-patients regularly, her symptoms and physical signs remaining unaltered.

Treatment.—From Dec. 30th, 1936, to Feb. 12th, 1937, she was given a daily intramuscular injection of 200,000 international benzoate units of progynon, receiving a total of 9,000,000 units over a period of 45 days.

Result.—During this time her obesity, hypertrichosis, abdominal striæ, hypertension, backache, and lassitude remained unaltered. Her headaches, however, greatly improved and averaged only two a week. They had previously been a daily occurrence. Menstruation ceased altogether. Two weeks later her headaches returned with their former frequency and severity.

SUMMARY AND CONCLUSIONS

1. Three cases of Cushing's syndrome were given large doses of œstrin daily over a period of several weeks.

2. No effect was obtained on the obesity, hypertrichosis, abdominal striæ, or hypertension.

3. Subjective improvement was noted in all three cases, and the severe headaches, such a distressing feature in this condition, were either abolished or greatly improved.

4. The cause of these headaches is obscure; no less obscure is their relief by injections of œstrin. Such evidence as there is suggests that the headaches are not due to enlargement of the pituitary gland with distension of its dural envelope; nor can they be due to the arterial hypertension, since this remained unaltered by the injections.

I am indebted to Dr. T. Izod Bennett for his thoughtful encouragement and ready permission to treat cases under his care. My thanks are also due to the directors of the departments of pathology, biochemistry, and radiology for the various special investigations; to Dr. L. R. Gardner for the photographs reproduced in Figs. 1 and 2; and to Messrs. Schering Ltd. for the supplies of progynon.

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THROMBO-ANGIITIS OBLITERANS IN FATHER AND SON

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Considering the fact that in the ætiology of thrombo-angiitis obliterans (Buerger's disease) the assumption of some predisposing constitutional factor is almost necessary, it is surprising that more than one member of the same family is so seldom affected. I mean that the suggested exciting causes, such as tobacco-smoking, do not seem to act in the absence of some unknown constitutional predisposing factor—possibly a developmental defect in certain blood-vessels. Moreover, I still maintain that, in London at any rate, the majority of the sufferers are members of Central European Hebrew families.

Meszaros in 1931 found that 8 members of a pure Hungarian family were affected with an arterial disease, but as 4 of the 8 were females, and as no microscopic examination was made, I do not think that his cases were true examples of Buerger's thrombo-angiitis obliterans as he maintained. For the same reason one cannot accept certain cases quoted by Meszaros from other articles on the subject—namely, Niemeyer's cases in mother and son and Higier's cases in two sisters—though he also mentions Goldflam's cases in two brothers and Idelson's cases in father and son.

Samuels (1932), however, wrote:

> In the examination of over 500 cases of thrombo-angiitis obliterans I have observed three families in which it occurred in brothers. In none of these families has there been any history of the disease in parents or grandparents on the maternal or paternal side, nor has there been evidence of the disease in other blood relatives.

In two of the families three and in the other family two brothers were affected, but in each of the 8 cases heavy cigarette-smoking could be adduced as a possible toxic cause of the disease.

CASE REPORT

In the following cases of father and son now under my observation, tobacco cannot be altogether excluded as a cause.

The father, now aged 58½, a Hebrew cabinet-maker from Russia, had the small toe of his left foot amputated in London for gangrene 16 years ago. Next year (August, 1922) his left foot was amputated in Berlin. The wound did not heal and in the following month his left leg was amputated. After this he had no trouble in the stump of his left leg, but in 1924 he began to suffer from pains in his right toes. In December, 1926, he was admitted under my care at the German Hospital, London. The tip of the second toe of the right foot was black and there was some discoloration of the third and great toes. No pulsation was felt in the dorsal and other arteries of the right foot. There was normal pulsation in both radial arteries at the wrist. Brachial blood pressure: 145/80 mm. Hg. Blood-Wassermann reaction negative. By ordinary clinical examination nothing else abnormal was found. The treatment included intravenous sodium citrate injections, small doses of potassium iodide by the mouth, locally hot-air baths, Bier's passive congestion treatment, and the application of xeroform powder. Progress was very slow and tiresome, partly in hospital and partly in his own home, but the tip of the second toe came away spontaneously, and finally healing was complete by the end of 1928. After that he remained well. I saw him in April, 1937. He says he can walk as much as a mile without stopping, though he occasionally feels a little pain in front of the ankle (his only leg). The "cure" in this case is a functional one; there is no pulsation to be felt in the dorsal or other arteries of the foot and the needle of Pachon's oscillometer gives hardly any oscillation with the band round the calf. He still smokes about ten small cigarettes daily.

The son, aged 33, is now in hospital under my care for thrombo-angiitis obliterans; he was the second son. Two years ago he began to have intermittent claudication in the right leg, with the usual pain in the calf on walking, and since September, 1936, he has suffered from ischæmic troubles in the right foot—in spite of intramuscular injections of Padutin and Carnacton. He has an ischæmic ulcer on the dorsum of the right foot and the black mummified little toe of that foot has just been shed spontaneously. He says he has smoked only about ten cigarettes daily. Though the left foot appears normal, no pulsation can be felt in the dorsal artery of either foot. The oscillometer index at calf-level is 0·15 on right side, 0·3 on left side; over the right thigh it is 3·5, and over the left thigh also 3·5. No arterial calcification is seen by radiography in either leg. Blood pressure: in right arm, 140/70 mm. Hg; in left arm, 120/60 mm. Hg. Blood-Wassermann reaction negative. Nothing abnormal found in ordinary examination of thorax, abdomen, nervous reactions, retinæ, urine, and blood (except slight anæmia and leucocytosis). Blood-sedimentation: within normal limits. Blood-serum cholesterol: 150 mg. per 100 c.cm. Blood uric acid: 3 mg. per 100 c.cm. Blood-serum calcium: 8·4 mg. per 100 c.cm. Fasting blood-sugar: 0·113 per cent.

There is now hardly any pain, and under rest and local applications the foot is tending to heal. A liver extract by the mouth may be acting favourably.

I have never met with thrombo-angiitis obliterans in brothers, and only once in father and son—namely, in the above-described cases. Recently a son of one of my earlier patients returned from America with what he thought might be his father's disease, thrombo-angiitis obliterans, but on examination it turned out to be a form of chronic rheumatoid arthritis.

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AGRANULOCYTIC ANGINA, PURPURA AND TUBERCULOUS LARYNGITIS

COMPLICATING PULMONARY TUBERCULOSIS

WITH RECOVERY

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THIS paper describes the case of a woman of 26 admitted to King Edward VII Sanatorium, Midhurst, with a large tuberculous cavity at the apex of the right lung, complicated by laryngeal tuberculosis. An artificial pneumothorax was instituted and while collapse was being obtained there was a spread into the left lower zone. Sanocrysin injections were therefore given but after seven injections totalling 1·05 g. agranulocytic angina and purpura developed. A blood transfusion and Pentnucleotide injections were administered and from one of the latter a staphylococcal abscess of the buttock formed. A leucocytosis occurred and recovery ensued. Subsequently phrenic evulsion and upper thoracoplasty supplemented the pneumothorax and closed the cavity in the lung. Meanwhile with silence and the galvanocautery the severe laryngeal involvement healed and after fifteen months of continuous treatment she was discharged fit and well and sputum-free.

Agranulocytosis has seldom been noted as a complication of gold injections, although there have been many descriptions of it following administration of amidopyrine. Ellman and Lawrence (1935) reported a patient with rheumatoid arthritis who received a total of 2·5 g. of Solganol B and developed agranulocytosis with purpura hæmorrhagica and died. Hartfall and Garland (1935) reported 100 cases of rheumatoid arthritis treated with gold injections with one fatal case of agranulocytosis after a total of 1·0 g. of Crisalbine and two of purpura hæmorrhagica following 0·36 g. and 2·3 g. of gold salt respectively. In the discussion on agranulocytosis at the Royal Society of Medicine (1936) most blame was laid on amidopyrine, but Sir William Willcox referred to gold among numerous other chemical agents as a possible causal factor.

In association with pulmonary tuberculosis, agranulocytic angina has been recorded by Erwin (1933) and Morris, Miller, and Neville (1935), though in neither case was gold or other drug given; both were fatal. Though purpura occasionally follows the gold treatment of pulmonary tuberculosis it is not a common complication and agranulocytic angina appears to be exceptional.

In all accounts of agranulocytosis its grave prognosis is emphasised and most patients die in spite of treatment. Specific treatment with pentnucleotide with recovery was first described in this country by Bulmer (1933). This method is still recommended but is often disappointing in its results, and Witts (1936) does not particularly favour it. It may, however, help to stimulate leucocytosis, and blood transfusion and liver therapy have also been suggested. In this particular case a staphylococcal abscess of the buttock developed and Dr. R. A. Young, who was then in charge of the patient, was of the opinion that this contributed largely to the subsequent leucocytic response which had until then been obstinate. He informs me that he has had two other similar cases of recovery from agranulocytic angina.

Sir StClair Thomson (1924) has shown how laryngeal tuberculosis complicating a pulmonary lesion makes the prognosis, both immediate and remote, much less favourable though not hopeless. Adequate treatment of the primary lesion with closure of cavities and freeing the sputum of tubercle bacilli has a secondarily beneficial effect on the laryngeal disease. At the same time strict rest of the voice, and in suitable cases the use of the galvano-cautery in experienced hands, encourages healing of the larynx and improvement here is usually concurrent with improvement in the lung.

CASE RECORD

The patient, aged 26, was the wife of a bank clerk in London and was admitted to King Edward VII Sanatorium on Nov. 27th, 1935, with pulmonary tuberculosis. No family history of tuberculosis or definite contact were known. In August, 1935, she had become debilitated nursing her mother-in-law with jaundice. A dry cough developed; later lassitude, malaise, night-sweats, and shortness of breath. Her doctor had the sputum examined and it contained tubercle bacilli.

On admission on Nov. 27th she was improved but was coughing up 2 oz. of sputum daily. Temperature was 98·4° F. and pulse-rate 78; weight 8 st. 13 lb. and height 5 ft. 4 in. Her voice was husky but she had no pain on

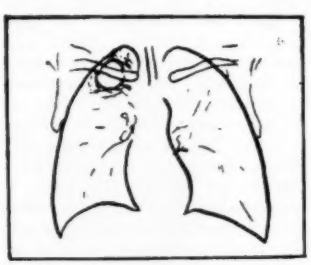

FIG. 1.

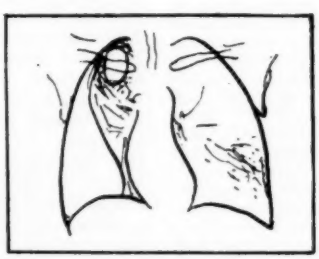

FIG. 2.

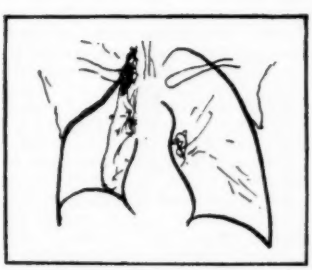

FIG. 3.

swallowing. Blood sedimentation was 22 per cent. (micro-method). Radiography showed a large right apical cavity and surrounding infiltration (Fig. 1). Sir StClair Thomson examined the larynx and reported tuberculous laryngitis with interarytenoid deposit and abrasion of both vocal cords. She was put on a régime of strict silence.

Right artificial pneumothorax was induced on Dec. 9th with moderate collapse of the lung and considerable general reaction and increase of sputum. In January infiltration spread into the left lower lobe accompanied by left-sided pleurisy (Fig. 2). Sanocrysin injections were therefore given weekly in the following dosage: 0·05, 0·1, 0·1, 0·2 g. et seq. up to 1·05 g. by Feb. 18th. This day she complained of sore-throat and the next evening her temperature, previously normal, rose to 100°. The throat was worse: red and swollen and swallowing was very painful. On Feb. 20th the temperature was 102·4° and she seemed very ill. The throat appeared inflamed but there was no exudate. Swabs were repeatedly negative for diphtheria. An erythematous and purpuric rash appeared on the shoulders, chest, and neck. These symptoms and signs persisted during the next few days in spite of general treatment. The diagnosis appeared to be acute tonsillitis but was obviously not of usual type. The temperature rose to 103·4° and pulse-rate to 120. She felt ill and complained of soreness of the throat and much difficulty in swallowing. The pharynx was red and swollen with no gross exudate or membrane.

On Feb. 25th Dr. K. F. W. Hinson, pathologist at the sanatorium, made a white blood count and found 2100 white cells per c.mm., no polymorphonuclears being seen in stained films. The diagnosis of agranulocytic angina was thus made evident. The next day the white cells were 2700, with no polymorphonuclears but a few myelocytes. A blood transfusion of one pint of citrated blood with 8 c.cm of pentnucleotide was given, 20 c.cm. more pentnucleotide were injected intramuscularly, and she was transferred to the Middlesex Hospital under the care of Dr. R. A. Young.

Further injections of pentnucleotide were made intramuscularly on four more days. From one injection she developed a staphylococcal abscess of the buttock and from that moment her blood picture and also her clinical condition began rapidly to improve. It appeared that this complication was the determining factor in her subsequent recovery. This proceeded apace; the temperature settled and the symptoms were relieved. By March 28th she was able to sit up, the temperature was nearly normal, and the sputum reduced from several ounces and frothy to half an ounce mucopurulent. She returned to the sanatorium on April 24th much improved but still with a troublesome cough and sputum containing tubercle bacilli. The blood count showed 11,200 white cells per c.mm, with polymorphonuclears 71 per cent., lymphocytes 20 per cent., and monocytes 9 per cent. The lung condition had not changed; there was collapse in the lower part of the right pneumothorax but the apex was adherent and the cavity open. The larynx, in spite of the recent severe adjacent trouble, was indolent and chronic. The vocal cords were now clear but the interarytenoid deposit persisted.

On May 5th the right phrenic nerve was crushed by Mr. Tudor Edwards to try to assist the closure of the apical cavity. Sir StClair Thomson carried out treatment of the larynx with the galvanocautery on August 10th with excellent results and subsequent complete healing and recovery of the voice. The phrenic paralysis was not adequate and upper thoracoplasty was carried out by Mr. Tudor Edwards; 37 in. from the upper six ribs were resected in two stages on Sept. 19th and Oct. 3rd. The artificial pneumothorax was continued throughout and eventually a most satisfactory result was obtained. By January, 1937, the apical cavity was not visible and the left lung had cleared up entirely (Fig. 3). Clinically she had no cough or sputum since December and the sputum had been free from tubercle bacilli since November. She was eventually discharged from the sanatorium on Feb. 17th, 1937, after 15 months' treatment, extremely fit, walking four miles daily and with no symptoms.

SUMMARY

The significant points in this case are:—

A young woman with severe pulmonary tuberculosis and a large apical cavity; a spread into the other lung. Laryngeal tuberculosis. Sanatorium treatment, artificial pneumothorax, and sanocrysin injections. Agranulocytic angina and purpura, treated by blood transfusion and pentnucleotide. From an injection of the latter a staphylococcal abscess developed which appeared to initiate or accelerate recovery. Return of the blood to normal. Recovery of the larynx with voice rest, galvanocautery, and treatment of the lung. Artificial pneumothorax supplemented by phrenic crush and then upper thoracoplasty to obtain complete obliteration of the apical cavity in the lung, the pneumothorax still being maintained. Patient eventually discharged after 15 months' treatment, very well.

I have to express my thanks to the Council and consulting staff of the sanatorium for permission to publish this case, and to Dr. G. S. Todd, medical superintendent, for invaluable advice and help in treatment; also to Dr. R. A. Young, under whose care the patient was in the Middlesex Hospital.

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ACCESSORY SPLEENS

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ACCESSORY spleens have no place in standard text-books of surgery[3 5 19 21]; Moynihan made no mention of accessory spleens in his book "The spleen and some of its diseases," and yet accessory spleens are not uncommon; they are described in most text-books of human anatomy.[4 6 9 16] Adami and Nicholls[1] found accessory spleens in 11 per cent. of autopsies. Jolly[11] found 20 cases of accessory spleens amongst 80 autopsies in children under 16 years of age, which would suggest that these spleens are more common in early life, and that possibly they atrophy with increasing years. The scanty notice taken by surgeons of accessory spleens is due to their small size and to their protected positions in the abdominal cavity. Accessory spleens are sometimes called spleniculi or lieniculi on account of their sizes, which vary from that of a lentil to that of a hazel-nut.

Accessory spleens may however be of clinical importance on rare occasions. Maingot[15] made a careful search for accessory spleens in a series of 13 cases of splenectomy for purpura hæmorrhagica, and he found no less than 7 cases. He emphasises the importance of extirpating all accessory spleens in such cases, lest these tissues should undergo a further hypertrophy and thus cause a continuance of the morbid condition for which splenectomy was undertaken. The most remarkable case of the hypertrophy of accessory splenic tissue is that

recorded by Eccles and Freer[8] in which a splenectomy for a traumatic rupture of the spleen was followed by enlargement of an accessory spleen to the size and shape of the normal spleen in ten years' time.

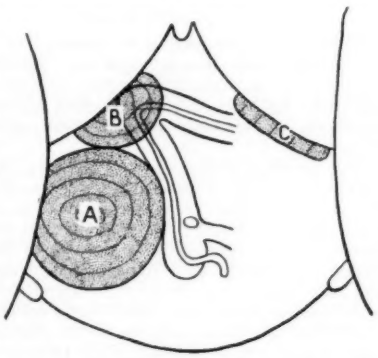

FIG. 1.—Diagram showing the position of the two accessory spleens (A and B) and the normal spleen (C).

ANATOMY

Accessory tissues with blood sinuses fall into three groups. The true accessory spleen with blood sinuses and malpighian bodies; the hæmal gland with blood sinuses; and the hæmal lymph gland with blood sinuses and lymph sinuses communicating with the blood and lymph systems respectively.

The true accessory spleens appear to be of two types. In the first, the accessory spleen is a constricted part of the main spleen with which it is connected by a band of fibrous tissue. In the second type it is a separate and distinct tissue mass. A typical example of the first type of accessory spleen is described by Helly.[10]

In this case the spleen was divided by a groove into two segments, joined by connective tissue bands carrying the branches of the splenic vessels. There were 11 accessory spleens varying in size from a lentil to a hazel-nut attached to the main spleens or to their connecting bands, by strands of connective tissue. By placing the two main spleens together, the divided spleen could be made to approach the size and shape of the normal spleen.

Another remarkable case of this type is described by Sneath.[20] Here an accessory spleen was found adherent to the upper pole of the left testicle where it was completely ensheathed by the tunica vaginalis. This spleen was connected with the main spleen by a band of tissue 33·4 cm. long, of which 14·5 cm. contained visible splenic tissue. The accessory spleen must have been carried down to its unusual position, during the descent of the left testicle from the abdominal cavity.

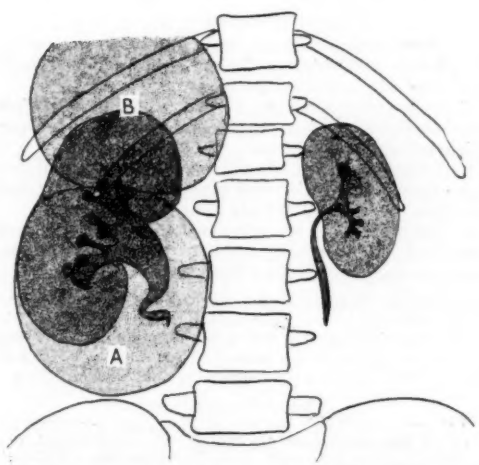

FIG. 2.—Tracing from a radiogram showing the two accessory spleens and the enlarged right kidney and renal pelvis.

Spleens of the second type, which are found as separate masses of tissue, are usually one or two in number, but more may be present. Albrecht[2] reports a unique case of this kind with 400 spleniculi scattered throughout the abdominal cavity. The main spleen was also present, being situated higher than normal with adhesions to the diaphragm. The present paper describes a case with accessory spleens of the second type. The spleens were so large that they had given rise to clinical symptoms and signs.

CASE REPORT

The patient was a Sinhalese girl of 15 years, who was admitted to the General Hospital on July 14th, 1936, with the provisional diagnosis of right congenital polycystic kidney. She had noted a lump on the right side of her abdomen for the last ten years.

FIG. 3.—Accessory spleen removed at operation (A in Fig. 1).

In the last month she had had a dull aching pain in the right side of the abdomen, and in the last year she had had an increased frequency of micturition of six times in the day and once at night, as compared with three times in the day and nothing at night previously. Her menstrual periods had been regular for eight months from their onset, but she had had no periods for the last eight months. Three months previously she had had "malaria."

Examination.—She was a well-nourished girl of a healthy appearance. There was a round lump the size of a grape-fruit on the right side of the abdomen (Fig. 1, A). It extended from the right loin to the anterior abdominal wall and it was dull on percussion. It could be moved inwards up to the umbilicus, and then a resonant note was obtained on percussion over the inner side. It did not move on respiration. Above the lump was a second round lump which reached from below the right costal margin down to the upper pole of the first lump (Fig. 1, B). The spleen was enlarged a fingers-breadth below the left costal margin (Fig. 1, C). A rectal examination revealed no abnormality in the pelvis.

A radiogram after an injection of Uroselectan B showed a normal pelvis and ureter on the left side, while on the right side the pelvis of the kidney was three times the natural size but was perfectly normal in shape (Fig. 2). The outlines of the two lumps are also seen in the radiogram.

Urine: albumin and sugar nil; in the deposit there were a few uric acid crystals and an occasional pus cell. Blood-urea: 38 mg. per 100 c.cm.

The enlarged right kidney shown in the radiogram was not sufficiently large to account for the lumps which were palpated in the abdomen. It was considered that the right kidney was hypertrophied as a result of the pressure on the right ureter by the lower abdominal lump. This lump was considered to be an ovarian dermoid with a long pedicle, and the abdomen was explored through a right paramedian incision on July 20th.

Operation.—A large round lump, the colour of splenic tissue, was seen in the right side of the abdomen, lying in a retroperitoneal position with the cæcum and ascending colon pushed over to its inner side (Fig. 1). The lump was mobilised by incising the peritoneum passing from its surface to the lateral abdominal wall, and it was now delivered through the abdominal wound. Entering on its postero-internal side at a hilus was a pedicle of blood-vessels, each vessel the diameter of a lead pencil. The vessels were ligatured and the lump was removed, as it was considered to be causing harmful pressure on the right ureter. The right kidney was palpated lying in its

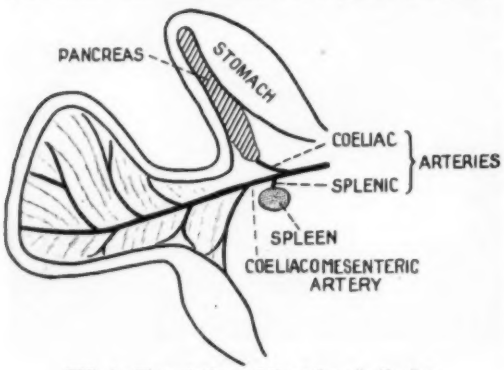

FIG. 4.—The relations of the spleen in the frog.

retroperitoneal bed, and the spleen was felt to be of normal shape and in its normal place. Below the liver and behind the hepatic flexure of the colon was a second lump also the size of a grape-fruit and the colour of the spleen with large veins coursing over its surface. It was not considered necessary to remove this second accessory spleen, and the abdominal wound was now closed.

The patient made an uninterrupted recovery from the operation and left the hospital on August 8th.

Blood examinations were made to determine if there might be any cause in this case for a hypertrophy of the splenic tissues.

Blood count: red cells, 3,710,000 per c.mm.; white cells, 5200 per c.mm. Differential count: polymorphs, 64 per cent.; lymphocytes, 34 per cent.; eosinophils, 2 per cent. No malarial parasites in the film. Recticulocyte count 0·8 per cent. Fragility of red cells: hæmolysis began in 0·4 per cent. saline and was complete in 0·34 per cent. saline.

It will be noted that apart from the history of "malarial fever" there is nothing to account for a hypertrophy of splenic tissue in this case.

Pathology.—The accessory spleen weighed 1¼ lb. when fresh. Fig. 3 shows the specimen after it had been preserved for some days. It is oval in shape and the vessels enter at a hilus an inch long on what was its postero-internal aspect. Prof. W. A. E. Karunaratne made this report on a section from the specimen. "The section shows splenic tissue with angiomatous spaces, in some of which red blood-cells are visible, but the majority of the spaces are empty. Lymph follicles are dotted here and there in the section. The capsule is very much thickened." The section had less malpighian bodies than are found in sections of normal splenic tissues.

DISCUSSION

This case is remarkable on account of the unusual size of the two accessory spleens. The lower spleen had pressed on the right ureter causing the unusual sequel of hypertrophy of the right kidney. Hydronephrosis would have been a more usual result of such pressure.

The position of the accessory spleen in this case is unusual. Keith[12] states that accessory spleens are found in the dorsal mesogastrium near the hilum of the main spleen. Rocher[18] states that accessory spleens are found near the hilum of the spleen in the gastro-splenic omentum, the pancreaticosplenic ligament, and the great omentum. Rudimentary masses of splenic tissue have even been found embedded in the pancreas. Accessory spleens occur therefore in that part of the dorsal mesogastrium that is supplied by branches of the cœliac axis. In the case described above, the accessory spleens were found in what was originally the part of the dorsal mesentery that was supplied by the post-axial branches of the superior mesenteric artery.

The normal spleen develops in the left leaf of the dorsal mesogastrium. Here the accessory spleens occupied positions corresponding to what were originally the left leaves of the dorsal mesentery.

Can the positions of the spleen found in this case be explained by a reference to comparative anatomy? The spleen is remarkably constant in position right through the gnathostome vertebrate series. Even in the elasmobranch fishes, the spleen lies to the left of stomach and is supplied by the lienogastric artery. In some amphibians and reptiles, however, the position of the spleen differs from other vertebrates by being placed opposite the intestines.[7] In the frog the spleen is a small spherical body lying in the left leaf of the dorsal mesentery, and it is supplied by the cœliaco-mesenteric artery which gives off in the pre-axial direction the cœliac and mesenteric branches, and in the post-axial direction the splenic and colic branches (Fig. 4).

Sir Colin Mackenzie[13 14] has drawn attention to the colic lobe of the spleen in monotremes, but even in these mammals the spleen lies to the left of the stomach in the dorsal mesogastrium and it is supplied by the cœliac axis. The position of the accessory spleen in the case described above is comparable to that of the spleen in some amphibians and reptiles.

SUMMARY

1. Accessory spleens are very rarely the cause of the clinical symptoms and signs on account of their small size and protected positions.

2. Accessory spleens are of two types, those which are constricted portions of the main spleen and those which are independent masses of tissue.

3. A case is described with two accessory spleens of the latter type, which had caused clinical symptoms and signs on account of their unusually large size.

4. The position of the accessory spleens in this case is unusual, but it is comparable to the position of the spleen in some amphibians and reptiles.

My grateful thanks are due to Prof. W. C. O. Hill for valued help with the anatomical points dealt in this paper. I am indebted to Mr. A. M. Mendis of the General Hospital for the photographs and to Mr. S. C. N. Cotton of Messrs. Plate Ltd. for the reprint of the X ray picture.

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CLINICAL AND LABORATORY NOTES

TWO CASES OF PREGNANCY WITH GENERAL PARALYSIS OF THE INSANE

BY MARGARET A. QUINE, M.B.Lond., D.P.M.

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Two women with general paralysis of the insane have been successfully delivered while under treatment at Winwick Hospital, and have made partial or complete recoveries. The cases are, I think, of interest not only because they are unusual but because of certain points of similarity and contrast in the clinical states and treatment.

The first patient, a primigravida, was before her illness a bright, intelligent woman. She responded well to treatment, her progress was uninterrupted, and she was discharged recovered. The second patient, a multigravida, had been less quick-witted and more indolent mentally. Moreover, on admission, her speech and muscular coördination were seriously affected, and she was accordingly given slightly different treatment. These facts must be considered in accounting for her less satisfactory progress.

Certain factors were common to both—namely, their age (40), the stage of pregnancy on admission (4–5 months), their progressive mental deterioration for at least two months, and the fact that neither had had any anti-syphilitic treatment. Both were in a fat, flabby and indolent state, with faulty habits, and complete indifference to their surroundings. Defective articulation and muscular incoördination were only evident in the multigravida. In both patients the laboratory tests for syphilis were positive in blood (Meinicke and Kahn) and in spinal fluid (Kahn); the cells were increased, the globulin test was positive, the protein content raised, and the Lange curve was of a paretic type.

As the primigravida was in poor health, with a cardiac murmur, a copious foul vaginal discharge and occasional albuminuria, no antisyphilitic drugs were given, the treatment being solely directed towards improving her general health; it was thought unlikely that the fœtus would survive. The multipara, on the other hand, received antisyphilitic treatment at once. In both patients labour was induced at term by means of quinine and castor oil.

The primigravida bore a healthy looking boy. His blood gave weak positive results with the Meinicke and presumptive Kahn tests, the routine Kahn and Wassermann being negative. The multigravida bore a delicate female child, in whose blood all the tests for syphilis were positive. Antisyphilitic treatment in the form of mercury, iodides, and a course of Quinostab injections was given to both patients. After this the primigravida was subjected to therapeutic malaria. She sustained eight rigors, five of these giving temperatures of well over 105° F. A second course of quinostab, &c., and exposure to ultra-violet light, was followed by steady improvement which continued up to recovery and discharge from hospital within a few months. She was then cheerful, mentally composed, and fully aware of her new responsibilities. Her blood and spinal fluid were still positive, but the Lange curve had changed from a paretic to a luetic one.

The multipara was also treated after confinement with quinostab injections, &c., but the fever was induced with Pyrifer, twelve injections producing eleven rigors. Further antisyphilitic treatment had to be discontinued because of toxic symptoms. She too showed improvement in her mental state, but this has not yet progressed to recovery. She is still in hospital, she is easily confused, and if she is excited muscular tremors appear and her speech becomes affected. Her blood and cerebro-spinal fluid still give positive tests and her Lange curve has remained paretic.

OBSERVATIONS

(1) The favourable results in these cases may have been due to the strain of pregnancy accelerating the toxæmia of syphilis, thus forcing attention to the mental state earlier than is usual in women affected by general paralysis. (2) The extra strain of pregnancy may contra-indicate antisyphilitic therapy until after delivery. (3) The primigravida, who had no antisyphilitic treatment before parturition, had a living and healthy child with limited positive tests. In this case the later treatment with drugs and malaria gave excellent results. (4) The multigravida, who had antisyphilitic treatment before parturition, also had a living child, but it was weak and gave positive results with all syphilitic tests. In this case the later treatment was with pyrifer, not malaria; antisyphilitic therapy had to be discontinued and the results were not so good. (5) These findings seem to support the opinion of Scandinavian authorities that antisyphilitic treatment in late tertiary syphilis may be useless and even harmful. (6) The patient treated with pyrifer was clinically in a more advanced state of paresis than the one treated with malaria, and it cannot be deduced that malaria, as a curative agent, is superior to pyrifer.

I am indebted to Dr. F. M. Rodgers, medical superintendent of Winwick Mental Hospital, for permission to publish these cases.

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BRUCELLA ABORTUS INFECTION

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AND

C. RICKWORD LANE, D.M. Oxon.

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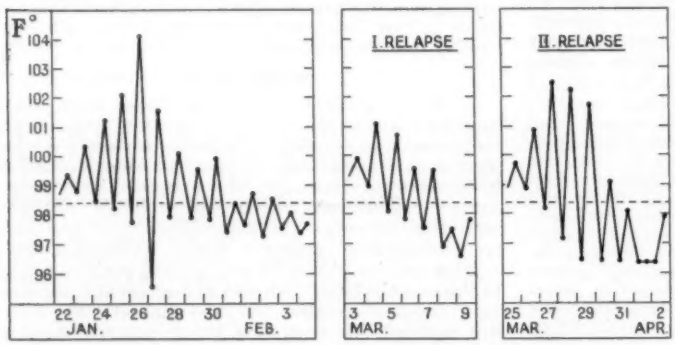
THE case here recorded is one of *Brucella abortus* infection in a young child showing clinically only continued remittent fever and a slightly enlarged spleen.

The patient is a healthy Japanese girl, aged 6, who has been living in this country for two and a half years. The only previous illnesses have been whooping-cough and diphtheria. In the middle of December, 1936, she and her sister contracted influenza together, and this

child had a high temperature and bronchitis lasting about ten days. On Jan. 21st, 1937, she went to a party, and on the following day complained of fatigue and anorexia and showed a slight temperature. Subsequently the temperature rose regularly every afternoon and came down with a great deal of sweating in the morning (see Chart). She was restless during the night. Otherwise she complained of nothing. On examination the pulse-rate was 100–140, respirations 22–28, her tongue was fairly heavily furred but always moist. There was a small hyperæmic swelling in the external meatus of her right ear, from which she felt only a sensation of heat in the ear. On Jan. 24th a small gingival abscess near a decayed tooth, of which she had not previously complained, burst. From that day she was given half a tablet of Prontosil Album three times a day. The spleen gradually became enlarged until Jan. 26th, and thereafter diminished. There were no other physical signs during her illness.

On Jan. 25th in the evening her temperature rose to 104·2° F., but after aspirin gr. 2½ a profuse perspiration was accompanied by a fall of temperature to 95·5° F., pulse-rate 82 and weak, and she appeared somewhat collapsed. From the following day the temperature began to subside, and several days later it became normal.



Temperature charts of the initial infection and of the two relapses.

The swelling of the auditory meatus disappeared without bursting.

Blood collected on Jan. 27th, tested against Oxford Standards Laboratory cultures, agglutinated *Brucella abortus* to a dilution of 1 in 500, but did not agglutinate *Brucella melitensis*, *Bacillus typhosus* H or O, *Bacillus paratyphosus* A or B. A blood culture also taken on Jan. 27th subsequently grew an organism which is considered, for the reasons set forth later, to be a true *Br. abortus*. The leucocyte count on this day was: white cells, 4600 per c.mm.; differential count: polymorphs 25·0 per cent., lymphocytes 59·5 per cent., hyalines 15·5 per cent.; 62 per cent. of the polymorphs were of the relatively immature "band" type. There was no urinary abnormality. On Feb. 5th—that is, eight days later—the titre of the serum against *Br. abortus* was unaltered.

There have so far been two relapses, the first starting on March 3rd and lasting until the 8th, and the second from March 25th until the 31st (see Chart). The clinical features of the two relapses were quite similar to the original attack. The spleen was definitely enlarged, especially in the second relapse when it was palpable from the first day of the illness. The hyperæmic swelling of the auditory meatus was also noticed. Sweating was not so excessive as in the original attack. The second relapse began with vomiting. She was given prontosil from the beginning of the relapses. During the second relapse she was also treated with an instillation of 5 oz. of 1 in 5000 acriflavine in normal saline into the colon repeated daily for ten days as suggested by Arnold Jones (1935). The recovery from the last attack appeared excellent. The child is fatter and is less pale, whereas during convalescence from the previous attacks she remained thin and pale.

An attempt was made to discover the source of the infection. The girl had never been in contact with cows, and the milk-supply was pasteurised and obtained from a reputable dairy. The district medical officer supplied the information that he had no knowledge of any cases of abortus infection occurring locally. It is not, however, a notifiable disease. The patient's family keeps a dog, a cocker spaniel, which became ill with a high temperature, vomiting, and diarrhœa about a week before the girl's present illness, and was sent to a kennel. Abortus infection in dogs is very rare, but several cases have been reported. One case in France, a bitch, caused a small domestic epidemic (Dalrymple-Champneys 1929). The serum of the dog owned by the patient gave a completely negative (1 in 2·5 to 1 in 500) agglutination reaction with the *Br. abortus* culture of the Oxford Standards Laboratory on two occasions. The source of the infection, therefore, remains obscure.

ISOLATION OF ORGANISM

In view of the difficulty which is often encountered in isolating *Br. abortus* from the blood stream it may be of interest to record the method which was successful in this case:—

About 1 c.cm. of blood was inoculated direct into each of three screw-capped bottles containing about 15 c.cm. of ordinary lemco broth and about ½ c.cm. of Fairchild's glycerinated trypsin; two of the bottles also contained 1 per cent. of glucose. The bottle containing no glucose subsequently had the air in it replaced by an atmosphere containing about 10 per cent. CO_2. Growth occurred in one of the bottles containing trypsinised glucose broth after about 8 days' incubation at 37° C., and two days later in the bottle containing ordinary trypsinised broth with 10 per cent. CO_2. The remaining bottle of trypsinised glucose broth grew nothing after several weeks' incubation.

CHARACTERISTICS

Subcultures could at first only be obtained in an atmosphere of 10 per cent. CO_2, a profuse growth occurring on liver infusion agar, meagre growth on human serum enriched lemco agar, and very scanty growth on simple lemco agar. Subsequently good growth occurred on ordinary agar in 10 per cent. CO_2, and later growth could be obtained under aerobic conditions on liver agar, and finally on ordinary lemco agar.

The organism was a small Gram-negative coccobacillus, which was non-motile; it produced H_2S after 24 hours' incubation, and was still producing it after 14 days on both ordinary agar and liver agar, and both aerobically and in 10 per cent. CO_2.

Its agglutination reactions were as follows:—

Patient's organism with	Oxford abortus serum	1 in 500 Std.+
	,, melitensis ,,	1 in 500 Std.−
	Patient's serum	1 in 250

Agglutination absorption tests, using 9 volumes of a 10,000 million per c.cm. suspension of the patient's organism to 1 volume of serum incubated for 18 hours at 56° C., gave the results shown below.

The unabsorbed Oxford melitensis serum used in this test agglutinated the Oxford abortus culture to 1 in 250 Std.− and the Oxford melitensis culture to 1 in 250, while the unabsorbed Oxford abortus serum agglutinated the Oxford abortus culture to 1 in 500 and the Oxford melitensis culture to 1 in 50.

1. Absorbed Oxford melitensis serum with Oxford abortus standard culture ..	0
2. Absorbed Oxford melitensis serum with Oxford melitensis standard culture ..	1 in 50 Std.—
3. Absorbed Oxford abortus serum with Oxford abortus standard culture ..	0
4. Absorbed Oxford abortus serum with Oxford melitensis standard culture ..	0

The growth limitations, H_2S production, agglutination and absorption reactions appear to render it certain that this organism is a true *Br. abortus*.

COMMENTS

The main points of interest in this case are the youth of the patient, the early diagnosis, and the successful isolation from the blood stream by a method which was not originally specially designed for the purpose of isolating members of the brucella group.

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ACUTE SUPPURATIVE PERICARDITIS

By J. W. Macfarlane, M.C., M.D., F.R.F.P.S. Glasg.
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It is well known that the fatality-rate of purulent pericarditis, treated medically, is almost 100 per cent. (Bunch 1935). Shipley and Winslow (1935), reviewing their own results and those of others, came to the conclusion that early operation was the only satisfactory method of treatment, but found that even if operation had been delayed there was still hope of recovery. They said that aspiration may on occasion be used to give relief but has no curative value. Even in cases treated surgically, the mortality-rate was about 40 per cent.

The following case is recorded because the patient, although treated by paracentesis only, made a complete recovery.

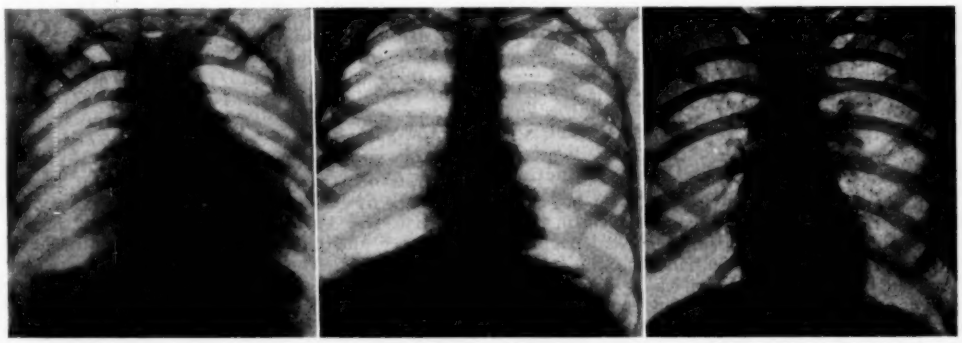
A girl, aged 16, was admitted to the Royal Infirmary on July 10th, 1929, complaining of pain in the chest of six days' duration. She had had measles and pneumonia in infancy but there was no history of rheumatism or chorea.

FIG. 4.—Electrocardiogram showing right axial deviation.

Present illness.—Three weeks before admission she developed cellulitis of both hands. This was treated at the out-patient department and several incisions were necessary. These healed gradually. Six days before admission she complained of pain in her chest, which gradually increased in severity.

On admission she looked ill and anxious, was pale, and perspired freely. She lay on her right side and complained of severe pain in precordia. Recent operation scars were seen on both hands. Breathing was somewhat laboured. Temp., 103·2° F.; pulse-rate, 130; respirations, 40. The pulse was regular in force and rhythm, but rapid and of poor quality. The apex-beat was not visible but was palpable in the 4th space in the midclavicular line. Cardiac dullness was increased on percussion, the right border being ½ in. to the right of right sternal margin, the upper border at the 3rd left space, and the left border ¾ in. outside the midclavicular line. The sounds were heard at all areas but were of poor quality. Pericardial friction was heard at the left lower border of sternum. The percussion note at the left base of lung was impaired, but vocal fremitus and resonance were normal; no adventitious sounds. Leucocyte count, 12,000 per c.mm. On the day after admission radiography gave no evidence of pericardial effusion.

FIGS. 1 2 3



July, 1929. September, 1929. June, 1937.

Progress and treatment.—On July 14th the cardiac dullness had increased; the right border was 1½ in. to the right of the right sternal margin, the upper border was at the 2nd rib, and the left border was 1¼ in. outside the midclavicular line. Sounds were muffled and pericardial friction had disappeared. The leucocyte count was 17,200 per c.mm. Radiography showed a pericardial effusion (Fig. 1).

On July 15th Mr. J. A. G. Burton did an exploratory paracentesis and withdrew 400 c.cm. of purulent fluid. The pathological report was: "Films showed abundant polymorphs and a few Gram-positive diplococci; on culture a growth of *Streptococcus mucosus* (pneumococcus morphologically resembling pneumococcus type 3) was obtained." (Dr. J. Steven Faulds.) Wassermann and Widal reactions and blood culture were all negative.

On July 16th the cardiac dullness was still much increased, the right border being 2 in. to the right of the right sternal margin, the upper border at the 2nd rib, and the left border 2 in. outside the midclavicular line. Mr. Burton did a second paracentesis, and blood-stained fluid and fibrin were obtained in small amount. Pathological report: "A few Gram-positive cocci in the direct, but no growth obtained on culture." Leucocyte count, 10,800.

On July 24th the cardiac dullness was decreasing, the right border being 1 in. to right of the right sternal margin, the upper border at the 2nd space, and the left border 1 in. outside the midclavicular line. The heart sounds were heard more distinctly and there was no friction. On the 29th, however, dullness was detected on percussion at the left base, and on August 1st the left chest was explored and fluid withdrawn. It contained "large endothelial cells and some polymorphs in direct smear; no organisms in films or culture." On August 5th free fluid was detected in the abdomen; the liver was enlarged, the lower border being 3 in. below the costal margin. On the 10th the right border of heart was ½ in. to the right of the right sternal margin, the upper border at the 3rd rib, and the left border ½ in. outside the midclavicular line. On August 20th the patient had a temperature of 104° F., with pain and tenderness in the right iliac fossa, and vomiting. She was seen by Mr. Burton, who decided not to operate, and by the 23rd the abdominal signs and symptoms had disappeared. At the end of the month the heart boundaries were within normal limits; the sounds were normal and the lungs clear. On Sept. 10th the patient was allowed up in a chair; on the 14th radiography showed no evidence of enlargement of heart (Fig. 2), and on the 17th she was dismissed to a convalescent home.

For a month after leaving the home she rested as much as possible, and led a very quiet life. After this, however, she did not limit her activities in any way, and led a normal life—swimming, cycling, &c. She is now working as a domestic servant. When seen on June 16th, 1937, she was a healthy looking young woman. The heart boundaries were within normal limits, and the sounds were pure and of good quality. Radiography of the heart showed no enlargement (Fig. 3); an electrocardiogram revealed slight right axial deviation (Fig. 4).

The striking features about this case are first, that recovery ensued without surgical treatment, and secondly, that the patient has recovered so completely that she is able to carry on a normal and vigorous life.

One would expect that after purulent pericarditis there would almost certainly be some pericardial adhesion, and even some permanent damage to the cardiac muscle, as the result of the action of toxins. In the surgically treated cases this does not happen. Shipley (1936) states that of 39 patients of whom data have been published at least one year after pericardiotomy, 35 were alive and well at the time of the report, with cardiac boundaries within normal limits; one was alive with adhesive pericarditis and another had died of this condition. In addition he gives details of 6 of 7 recovered cases in his own series, and none of these showed clinical evidence of disability.

It appears from the case I have described that complete recovery is also possible, even when only paracentesis is used. I make no claim, however, for the routine use of non-surgical treatment, since the results reported by Shipley and others show clearly that early diagnosis followed by pericardiotomy offers the best chance of recovery.

SUMMARY

The case-history of a patient with purulent pericarditis is reported. Although treated only by paracentesis she recovered. Eight years later the heart shows no signs of any abnormality, and there is no evidence of any functional disability.

I have to thank Dr. J. C. Middleton for permission to publish this case.

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MEDICAL SOCIETIES

ROYAL SOCIETY OF MEDICINE

SECTION OF PSYCHIATRY

AT a meeting of this section on June 29th, Dr. T. A. ROSS, the president, took the chair, and a paper on the

Influence of the Emotions on Bodily Functions

was read by Dr. ERICH WITTKOWER. He began by speaking of the exaggeration of materialism in medicine at the end of last century which had neglected the total personality of the patient and the relation between the patient and the physician. The problem of psychosomatic inter-relationships could be approached by the study of organ neuroses, by the study of the effects of organic diseases on the total personality, by the experimental production of physical alterations and other effects on the total personality, and by the experimental production of psychical alterations and the observation of their effect in the physical sphere. The first and last of these paths represented his own lines of work, on which he now presented an interim report.

Everyone knew that respiratory changes might express emotions. Most workers agreed that breathing became shallow and rapid when the patient was attentive. Regular respiration coincided with a visually conceptive type of individual, and irregular breathing with an auditory type. It seemed reasonable that people exposed to emotional intensity should show strong or protracted reaction on the respiratory organs. These reactions might become fixated and produce the hysterical disorders of respiration. Changes in the circulation under the influence of emotion were familiar. During pleasant emotion the blood accumulated in the brain and periphery and during painful emotion in the abdominal organs. The blood pressure might rise or fall and prolonged emotional stress might lead to true hypertension. Feeling had been located in the heart since antiquity, but very little experimental work had been done on the influence of emotion on the heart. A radiologist's wife had suffered from heart attacks during arguments, and one day her husband had taken a radiogram of her heart during an argument and had found that it was smaller than normal. Experiments under hypnosis had shown that the heart often changed in size by more than 1 cm. during emotion.

Research had been carried out on the secretion of saliva under hypnotic emotional stimulus. The type

of emotion had been found to be irrelevant; the change in salivary secretion depended on the individual. Some people salivated under the influence of any emotion, while in others the mouth became dry. The result was due to change not in the quantity of saliva produced but in its composition. Beaumont in 1834 had reported that the gastric secretion of Alexis St. Martin stopped whenever the man got excited. G. Heyer had produced psychical secretion in hypnosis and then subjected the patient to vivid emotions, which always stopped secretion. Dr. Wittkower's experiments had shown that changes in both directions could be shown under the influence of emotion in the acidity, emptying-time, and amount of secretion. The same emotions in the same subjects caused uniform changes. The degree of reaction varied on different days but its type remained the same. Different subjects reacted differently: one person might have hyperacidity when disgusted, another hypoacidity or hypersecretion. The changes in salivary and gastric secretions were parallel. Thus two types of individual could be distinguished: plus and minus types, differentiated by the secretory behaviour of their salivary and gastric glands under the influence of emotion. These types did not coincide with the vegetative types of Eppinger and Hess, but coincided with the eidetic types established by Jaensch. A radiographic study of the gastric mucosa had shown that the folds were well preserved under emotion but somewhat thrown up by movements of the wall. The tone was greatly increased, so that the pylorus was drawn right up to the body. Sometimes the increase of tone was so great as to cause spasm of the mucosa and a cribriform, cancellous pattern, which would be generally diagnosed as gastritis.

Similar changes in intestinal peristalsis were produced by emotion. All forms of constipation, including proctostasis, might have a psychoneurotic basis, and refractory cases could often be greatly relieved by methods of treatment based on Yoga practice. Excitement inhibited the bile flow in animals; in humans joy, sorrow, and fear had a stimulating effect on the bile, and annoyance inhibited it. There were also collective changes. Certain sensations in the right epigastrium after annoyance might be due to spasm of the bile-duct, and the digestion of annoyed people might follow a course similar to that seen in obstructive jaundice. Psychological factors might play a part in the ætiology of jaundice and gallstones.

Experiments on the kidneys showed that some people's urine underwent no changes in spite of the strongest emotion. If a change did occur, several constituents were usually altered at once. In some cases there was storage of uric acid; others showed changes in the quantity, hydrogen-ion concentration, chlorides, and total nitrogen. Experiments with the endocrine system showed a rise of the blood-iodine index during emotion by 20 to 50 per cent. in 13 out of 15 subjects. Iodine values were found in some patients such as were only known in Graves's disease. The iodine index gradually declined to normal when the emotion faded out. Work with the psychogalvanometer showed a close relationship between responsiveness and affectivity. Certain test words could be found which provoked a stronger psychogalvanic reaction than others; they indicated unconscious emotions. It was conceivable that a psychodiagnostic method could be developed.

It was obvious from the experiments that emotion was accompanied by severe disturbances of every bodily function, and that emotional stress might lead to functional disturbance and even ultimately to definite organic changes. There was no clear-cut differentiation between organic and psychological disease. Further investigations were in progress.

DISCUSSION

The PRESIDENT declared that this doctrine should be preached to the Sections of Medicine and Surgery, where it would have a more educative effect than in a section whose members were already converted. Practitioners often accepted a high blood-pressure reading as evidence of organic disorder when it was really due to apprehension caused by the test itself. So many cases of indigestion were cured by psychotherapy that an enormous number might appear to be due to neurosis. The recent German observations cited to show that gastritis was the usual cause were to all intents and purposes worthless. W. C. Alvarez, who had started his scientific life as an organicistic physician, had declared his belief after thirty years' research that by far the most frequent cause of all dyspepsia was neurosis.

Dr. C. P. BLACKER asked about the basis of selection of the subjects, how the emotions were induced under hypnosis, and whether any significant difference had been detected in the reactions of patients of different age and sex.

Dr. R. TRAVERS SMITH suggested that the reason why many subjects reacted in the same way to different types of emotion might be that the current coinage of so many emotions was anxiety. He asked whether the manifestations of emotion were the same in conscious as in unconscious patients; also to what extent the experiment itself caused the emotion. The mere passing of a stomach-tube, he suggested, was to some persons a very emotional situation, as was the exercise-tolerance test to many patients with bad hearts. Patients' homely descriptions of subjective experience—e.g., "my heart leapt"; "I will take it to heart"—might have a real physiological basis, which should be investigated.

Prof. DAVID SLIGHT (Chicago) mentioned the difficulty of quantitative measurement, and referred to recent experiments in which he and his colleagues had been able to modify the brain tensions of subjects under hypnosis and reverse their physiological effect. The suggestion of various stimuli, such as light, had produced physiological reactions similar to those of the real stimuli. Emotion produced very few changes in the electrocardiogram; he had noted some inversions of the P wave in the first lead, and one doubtful inversion of the T wave in the first lead. In their imagery of subjective emotion, poets had perhaps been in advance of physicians. The psycho-galvanic reflex, or galvanic skin response, was certainly an index of change in the emotional system, but was unfortunately almost too sensitive; it would sometimes react strongly to a cough. Its use in the study of emotions was very limited. After conditioning the response, the results he had obtained were closely correlated with the four types which Pavlov had discovered in dogs.

Dr. W. M. HEWETSON narrated an instance of apprehension causing a suspected poacher acute thirst. The present work showed, he said, the beginning of a connexion between psychology and organic medicine. As a fairly experienced general practitioner, one of his objections to psychology—particularly to Freud's entities—had been that it seemed to have no connexion with organic medicine. The Adlerian system had a connexion, but only a theoretical one. In pharmacology many drugs (e.g., quinine)

appeared to produce contradictory reactions, probably because of their long-distance effect, which was the more important but little recognised. Similarly, in the study of emotion the immediate results might be confusing and the long-distance results be the ones which would most repay investigation. Harvey Cushing, in his work on disorders of the pituitary and other glands, had mentioned three cases of brain tumour associated with acute gastric ulcers, two of which had perforated shortly after operation on the brain. The theory had been formed that the intervention had affected the hypothalamus, which was believed to be closely connected with the emotions. At the conclusion of his four lectures Cushing had said that the wide incidence of gastric ulcer to-day was probably due to excessive worry and tobacco.

Dr. R. A. NOBLE remarked that many patients who had been detained in hospital on suspicion of goitre and discharged with a report by the research unit of sympathetic over-activity went to the psychiatrist with no mention of any psychiatric phenomena in their history. He had recently observed a number of very neurotic patients suffering from pernicious anæmia, and he inquired whether Dr. Wittkower had observed any connexion between the two conditions.

Dr. D. N. HARDCASTLE, referring to a case of Dr. Wittkower's in which diarrhœa had followed emotional disturbance in six members of a family tree, all females, asked whether there was any difference between the two sexes in reaction to emotional disturbance.

Dr. G. R. A. RUDOLF said that fear could be caused by a large dose of adrenaline, between 7 and 15 minims, beneath the skin. The effect of adrenaline on the blood pressure of cats varied with the hydrogen-ion concentration of the blood. The *p*H of the blood might be linked with excessive gastric secretion.

Dr. C. C. CHESTERMAN observed that among primitive Bantus, who quickly exteriorised their emotions, major manifestations of hysteria were common, but psychoneurosis and gastric and duodenal ulcer were very rare and Graves's disease was probably never found. Hypertension was never seen except in persons who had had syphilis, nor was there any "disordered action of the heart." In some cases of diabetes he had suspected association with instability of the nervous system.

Dr. A. T. M. WILSON recalled that a surgeon of his acquaintance had tolerated intravenous injections of 30 c.cm. of adrenaline without any effect. Drugs varied enormously in their action on individuals, and much pharmacology might be founded on false premises.

Dr. LETITIA FAIRFIELD suggested that, where women were found to suffer more than men from neurosis in the same occupation, the men might escape through the greater freedom to express their irritation which convention allowed them. Hyperemesis gravidarum had formerly been attributed to neurotic disorder but was now regarded almost entirely as a symptom of metabolic disturbance of pregnancy. The pendulum might have swung too far in the physical direction, as in the attitude to many other diseases, and an effort should be made to link up the two ætiologies.

Dr. MARGARET LOWENFELD gave some remarkable instances in which deep-seated psychological disturbance in children had been reflected in physical symptoms such as constipation and diarrhœa, which had disappeared after appropriate psychotherapy. Such cases suggested that buried fears might bring about organic changes in the tissues. She considered that the experimental procedure would generally produce in children an emotional reaction so severe as hopelessly to confuse the picture.

Dr. WITTKOWER, in reply, said that he had experimented on volunteer patients who had been successfully treated by psychotherapy and on students. Emotions could easily be produced under hypnosis on patients whose history the worker knew. An interval was always given to allow the emotional reaction caused by the experimental technique to subside, and in any event the technique could not affect a hypnotised person. Bile had been withdrawn through a duodenal sound. Emotions produced a considerable increase in the leucocyte count.

NORTH OF ENGLAND OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY

A MEETING of this society was held in Newcastle-upon-Tyne on June 11th, with Dr. J. W. BRIDE, the president, in the chair.

Ovarian Extroversion for Secondary Amenorrhœa

Dr. K. V. BAILEY (Manchester) gave a further account of the operation he first described to the society nearly eighteen months ago (see *Lancet*, 1936, **1**, 315). Its object was to restore the function of cystic or cirrhotic ovaries by facilitating the approach of follicles to the surface. A wedge, having its base at the periphery, was excised sagittally from the ovary, its apex being carried down through the region of the hilum. Sutures were then passed to the ovary in such a way as to turn the cut edges of the ovary partially inside out. Of 17 patients he had operated on, 13 had begun to menstruate again immediately after the operation, and there were 4 failures. Unscientific optimism had now replaced unreasonable scepticism with regard to treatment with endocrine extracts, but he believed that this should be tried first in all cases of secondary amenorrhœa. When it had failed extroversion of the ovaries should be carried out provided the patient realised that success could not be guaranteed. The regularity with which menstruation had followed operation in most of his cases strongly suggested ovulation from ovaries which at operation certainly showed no recent or remote evidence of it. Proof of such ovulation had not been forthcoming however until one of the patients—who had had 2¼ years' amenorrhœa and showed no trace of a corpus luteum in either ovary at operation—became pregnant seven months ago. In this case regular menstruation began 5 weeks after operation, and continued at regular intervals of 4–5 weeks for two years until the advent of the present pregnancy, without endocrine assistance. In this case it was certain that ovulation had taken place recently, and it seemed fair to assume that it had also occurred on other occasions since the operation. Some regular stimulus to menstruation had evidently been present here (as in the other successful cases) which had not been present before the operation. In Dr. Bailey's opinion this stimulus was ovulation, but this could not of course be proved unless pregnancy followed. While recognising the inadvisability of performing laparotomy without thorough trial of treatment along general and endocrine lines, he regarded the operation as certainly justifiable, both to restore normal menstruation and to improve the prospects of pregnancy, provided

that all concerned were aware that success could be expected in only three-quarters of the cases.

Mr. HARVEY EVERS said that in his experience cystic ovaries were rare in secondary amenorrhœa. He mentioned a case in which a whole year of endocrine therapy had been necessary to produce a period. The patient then became pregnant almost at once, and a year after the first confinement she had another baby.

Dr. J. W. A. HUNTER (Manchester) congratulated Dr. Bailey. He thought it disappointing that a surgical method could get better results than endocrine treatment. He asked whether in the cases treated the amenorrhœa was due to pituitary or to ovarian deficiency. He could not see how an ovarian operation could affect a pituitary deficiency. Had any of the patients developed dysmenorrhœa and had the basal metabolic rate been taken? It would be useful if such cases could be thoroughly investigated before and after operation.

Dr. BAILEY said that the risk of the operation was small, with little bleeding at the time; he always investigated for adhesions subsequently. In most of his series he had been able to feel cystic ovaries. The basal metabolic rate and examination of endometrium had not been carried out, for all but two of the patients had been operated on before the publication of Kaufmann's paper on the endocrine treatment of this condition. In his opinion secondary amenorrhœa was usually due to primary ovarian deficiency or insensitivity of the ovary or uterus to pituitary stimulus. He agreed with Dr. Hunter about the indiscriminate use of the operation. That was why he had been sixteen months considering his cases before reading his second paper. The operation should not be done except as a last resort.

Prontosil in Obstetrics

Mr. BRYAN WILLIAMS (Liverpool), in a note on the use of prontosil in obstetrics, said he had given the drug in established cases of puerperal or post-abortum infection, and also as a prophylactic. Most of his patients had had it both by mouth and by injection, but as it had been shown that Prontosil Soluble exerted its bactericidal effect in the body only after being changed into sulphanilamide which was quickly absorbed by mouth, injection would probably prove unnecessary. Up to date he had used prontosil in 53 cases, in 23 of which a hæmolytic streptococcus was not isolated. Of these 23, 8 were local uterine infections, 4 were infections involving the pelvic peritoneum, and 8 were extrapelvic infections. The remaining 3 patients, who died, had ulcerative endocarditis, lobar pneumonia, and a pelvic abscess. In analysing the 30 cases in which hæmolytic streptococcus was obtained he used a classification similar to that adopted by Colebrook and Kenny.

Group 1.—In 13 cases the infection was limited to perineum, vagina, or uterus. In none of them was there any extension of the infection or suppuration during treatment. In one case a phlebitis of the leg developed. There were no other complications, and no deaths.

Group 2.—In 7 cases the pelvic peritoneum was involved. In 2 of them vaginal drainage was carried out, but in all the others the inflammation subsided. There were no deaths.

Group 3 comprised 10 cases of septicæmia or general peritonitis or both. In 8 a positive blood culture was obtained. In one of those in which organisms were not found in the blood the post-mortem signs of a septicæmia were present and in the other there were clinical signs of general peritonitis. Of the 4 cases which recovered, 2 subsided without any complication, the third developed pelvic cellulitis, and the fourth white leg. There were 6 deaths, the periods between admission and death in 5 of the cases being thirty-seven hours, forty-eight hours, seven days, eight days, and forty-nine days. The remaining case was one of delayed chloroform poisoning, with signs suggesting general peritonitis.

Thus among the 30 cases of hæmolytic streptococcal infection there were 6 deaths—i.e., 20 per cent. Colebrook and Kenny gave the mortality at Queen Charlotte's Hospital before the introduction of prontosil as between 16·6 per cent. and 31·6 per cent. After prontosil was introduced they published 64 cases with a mortality-rate of 4·7 per cent. Among the 10 cases of streptococcal septicæmia there were 6 deaths (60 per cent.) the corresponding fatality-rate among 36 cases treated without prontosil (1934–36) being 86 per cent. The dosage used had been small compared with that recommended elsewhere, and he felt that one or two of the patients might have been alive now had bigger doses been given. The great tragedy about these drugs was that they had been introduced into practice without adequate clinical controls, and now that they had met with success, no one had the courage not to use them. Furthermore there was strong evidence that the virulence of puerperal sepsis was decreasing. This evidence had come from both London and Sheffield.

In using prontosil for prophylaxis he had given it to each alternate case of the same operative procedure, each patient receiving about 63 tablets, or 19·0 grammes of the drug. Toxic effects had been very rare in the septic cases, but seemed commoner when the drug was given for prophylaxis. There had been one death in a patient admitted during pregnancy with advanced heart failure from mitral stenosis; prontosil had been given prophylactically but had apparently caused cyanosis, and was discontinued; the patient died ten days after delivery. Vomiting had occurred in a few cases, but no signs of kidney irritation had been observed. Cyanosis had been the only disturbing feature; it developed in 16 per cent. of cases, but in only one of them was it persistent, and in this case magnesium sulphate had been given. Mr. Williams found little difference between the incidence of morbidity in the treated cases and in the controls, but noted that all the serious cases were among the controls. In no case receiving prontosil had a hæmolytic streptococcus been isolated, and he thought the evidence was in favour of prontosil protecting against infection with this organism. If this was true it was the biggest advance in obstetrics since the days of Semmelweis, for the hæmolytic streptococcus was responsible for 70–95 per cent. of maternal deaths due to sepsis.

Discussion of this paper was postponed until the society's autumn meeting.

Mr. T. F. TODD (Manchester) read a note on the Relief of Pain in Pelvic Malignancy; Prof. FARQUHAR MURRAY read a paper on the Evolution of the Emergency Service; and Dr. WILLIAM HUNTER reported cases of ruptured uterus and prolapse of the cord.

NATIONAL RADIUM TRUST.—Viscount Halifax presided at a meeting of the trust on June 28th when plans were reviewed for making available a further substantial amount of radium. Lord Donoughmore was reappointed chairman of the Radium Commission, and Mr. R. Stanton was appointed secretary of the trust in place of Mr. George North, resigned.

NEW FURNESS HOSPITAL.—A new hospital is to be erected at Ulverston by the Lancashire county council at a cost of £75,000. Money in a local fund, started to provide a new hospital, will be added to the proceeds of the sale of the present cottage hospital site.

REVIEWS AND NOTICES OF BOOKS

Preoperative and Postoperative Treatment

By ROBERT L. MASON, M.D., F.A.C.S., Assistant in Surgery at the Massachusetts General Hospital. London: W. B. Saunders Company. 1937. Pp. 495. 25*s*.

THIS is an excellent book, combining practical wisdom with sound theory, and giving adequate consideration to the application of biochemistry to therapeutics. In its preparation Dr. Mason has had the assistance of twelve colleagues who have contributed chapters on subjects to which they have devoted special attention, and a uniformly high standard in many special branches is thus achieved. The references to the literature are up to date and well chosen. The most notable feature is the emphasis laid upon the adjustment of water-balance, and the control of the sugar and salt content as well as the reaction of the blood before and after operation. These matters are of such importance for the proper function of every tissue in the body, and are so often upset both by the patient's disease and by the surgical procedures adopted for its relief, that they must form the basis of rational treatment.

As our knowledge increases, however, we should take care not to become meddlesome. A patient who is well prepared for operation should seldom require elaborate after-treatment, and simplicity should be the guiding principle, especially in the patient's own interest. In the after-treatment of operation for toxic goitre, for example, subcutaneous salines should not in our view be used as a routine, and an oxygen tent is not the only method of cooling a patient—a cradle and a fan often work wonders. Again, it is not clear whether the authors realise that insulin is needed rather than sugar to stabilise carbohydrate metabolism after an operation. These, however, are matters of detail, and do not detract from the usefulness of a book which should be studied by everyone who undertakes the care of surgical cases.

Human Physiology: A Practical Course

Second edition. By C. G. DOUGLAS, C.M.G., M.C., D.M., F.R.S., Fellow of St. John's College, Oxford; and J. G. PRIESTLEY, M.C., D.M., Reader in Clinical Physiology, University of Oxford. Oxford: Clarendon Press (Humphrey Milford). 1937. Pp. 229. 12*s*. 6*d*.

To the authors of this book belongs the distinction of having introduced the idea of a course of practical physiology devoted exclusively to experiments on the human subject. Unlike most practical manuals based on the teaching in a particular laboratory, the book has become a modern classic. In this new edition its general form remains unchanged. The presentation is scholarly but not pedantic, and the instructions are precise without being abrupt. No student can read a chapter without learning a great deal more than the mere facts which it presents, for every step is reasoned and the importance of thinking correctly as well as performing carefully is made unmistakable. The experiments deal with respiration, the blood and circulation, the kidneys and the alimentary canal. The section on blood has been more radically altered than the others, but these have all been brought up to date and contain many additions of clinical importance, such as sugar-tolerance tests, urea-clearance tests, and tests for carbon monoxide poisoning. The importance of carbon dioxide as a therapeutic agent is also emphasised. The book as a whole, however, is designed to give an insight into the ways and means available for investigating the functions of the human body and to inculcate the importance of careful interpretation. It has features which appeal both to the pure scientist and to the student of medicine. The publishers have modernised the paper and printing, and this is a definite improvement.

Practitioner's Library of Medicine and Surgery

Vol. XII, Preventive Medicine and Hygiene. Supervising Editor, GEORGE BLUMER, M.A., M.D., David P. Smith Clinical Professor of Medicine, Yale University. Associate Editor, IRA V. HISCOCK, M.A., C.P.H., Professor of Public Health, Yale University. London: D. Appleton-Century Co. 1937. Pp. 993. 50*s*. (in sets only).

THIS is the final volume (with the exception of the index and supplement) of an encyclopædia of medicine emanating from Yale University for the use of American practitioners. The preface suggests that this last volume ought to have been the first, for it claims, what is truer in theory than in practice, that "the shift of emphasis in practical medicine has been from treatment to prevention . . ."

The division between private and public practitioners is much less sharp in America, where most medical officers of health are part-time officials, than in Britain, and this volume is less specialised and more generally informative than most of our text-books on hygiene. It can best be described as a field physiology, the application of biological science to the management of healthy and diseased man. Less than 100 of the 993 pages are devoted to sanitary science, and vital statistics and public health law are barely mentioned. Personal hygiene is dealt with fully and convincingly, and the notes on prevention of disease are extended to cover the widest field. Most of the authors favour periodical medical inspection at all ages and include early recognition of disease as part of its prevention, so classing as preventable every disease curable at any stage. Several of the chapters, such as Prevention of Endocrine Disorders by E. Kost Shelton, and Prevention of Diseases of the Genital Tract by Clyde L. Deming, are works of general medicine and surgery, not strictly within the province of hygiene and preventive medicine. In these and other chapters, clinical symptoms, diagnosis, and treatment are detailed, but biological speculations are unmentioned. Bearing in mind that the work is addressed to practitioners of medicine who may practise prevention and not to specialists in epidemiology and hygiene, this method of approaching prevention through clinical medicine has much in its favour, but it does not give the true philosophy of modern preventive medicine. In places there is dogmatism which is unhelpful. Thus, of chicken-pox we are told: "The period of communicability lasts until the crusts have disappeared from the skin and mucous membrane. In most cases this does not extend over seven days after the onset of the fever."

The chief drawback of the work is its insularity, it is too obviously written by Americans for Americans. Its great recommendation is that it does bring preventive medicine to the interest and understanding of all medical practitioners. Bibliographies at the end of each chapter give references almost exclusively to American authors, though the volume

starts with a quotation from Sir George Newman. The volume is well printed and well bound, but it weighs nearly six pounds.

Handbook of Orthopedic Surgery

By A. R. SHANDS, Jr., M.D., Associate Professor of Orthopedic Surgery, Duke University School of Medicine, North Carolina; and R. B. RANEY, Instructor in Orthopedic Surgery at the School. London: Henry Kimpton. 1937. Pp. 593. 21*s*.

SOME time ago the American Orthopedic Association appointed a committee to consider the question of undergraduate instruction in orthopædic surgery. The difficulty there, as here, is to obtain a correct balance between the hours given to teaching in the major departments and to those allotted to the special departments—at a time when the curriculum is becoming progressively more unwieldy. Dr. Shands, having noted that the committee recommended twenty-four periods of one hour for covering all that the student should know about orthopædics, has divided his text-book into twenty-four sections. But does he honestly believe that the brightest student can, even with the help of this book, swallow the whole subject in twenty-four big gulps? It cannot be done, and for this reason a book of nearly 600 pages, however well written, must, for the student with limited time, fail in its primary purpose. In the undergraduate period, it is not possible to teach more than methods of examination and diagnosis, and the broad principles of treatment.

Dr. Shands deals with each group of diseases in turn in the usual fashion, and he has done well in avoiding the use of eponymous terms, for which orthopædic surgeons appear to cherish a special affection. We miss, however, that insistence on principles which British surgeons have come to associate with the teachings of Hugh Owen Thomas and Robert Jones. It is only fair to say that we know of no text-book of orthopædics in which principles of treatment are given their true importance. The nearest recent approach to such a work, in a very limited field, is perhaps Calvé's monograph on surgical tuberculosis. Dr. Shands's illustrations are novel enough, being all drawings. This is the more astonishing since American publications have long been noted for their superb photographic reproductions; the revival here of nineteenth century methods is on the whole disappointing.

The man who has passed his finals will find this book readable and instructive, though he must beware of the occasional error such as the drawing on page 369 of a case of vertebral osteochondritis. There could hardly be a more misleading picture, so much so that one questions the accuracy of the drawing or the diagnosis.

Hautdesinfektions-Probleme

By JÖRGEN ERNST. Copenhagen: Levin and Munksgaard. 1937. Pp. 175. Kr.10.

IN 1935 the University of Copenhagen offered a prize for an essay on skin sterilisation. The gold medal was awarded to Jörgen Ernst, who has now published in book form the series of controlled experiments which formed the basis of his work. He first set himself to determine the effects of frequent application of various disinfectants on the bacterial flora of the hands of medical students and nurses working in the wards of Danish obstetrical institutions under ordinary conditions. Another question to be answered was whether such frequent disinfection would eventually lower resistance and result in the growth of an increasing number of colonies on culture. This effect was not observed even where some eczematous changes had begun to make their appearance. Only when spirit soap—spiritus saponis kalinus—was used continuously was there an increase in the number of colonies on culture. A single washing and the application of an antiseptic was not found sufficient to sterilise or greatly to reduce the number of colonies of bacteria grown in cultures, and effective disinfection was in most cases achieved only on the third day. It follows that more than usual care must be exercised by those who have just joined surgical or obstetrical units. The most potent agent for disinfection purposes was found to be 1–1000 sublimate solution in water. Unfortunately it was also the most irritating, and several of the subjects tested developed a mild degree of dermatitis and had to be excluded from the experiments. Disinfection by 70 per cent. and 90 per cent. alcohol after scrubbing with soap and water is the subject of special discussion and is on the whole the most favoured method. It would appear that excessive scrubbing is unnecessary and superfluous, as the number of colonies grown was not notably diminished thereby.

Ernst maintains that infection of the hands can be "auto-" as well as hetero-genic. Two of the subjects of an experiment developed a greatly increased bacterial flora of the hands—one after expression of a tonsillar plug which contained the same organisms, and another in association with a septic or "hospital" throat. The moral is not here drawn, but the observation clearly confirms the inadvisability of allowing persons with such infections to operate or assist at operations or to conduct labour. The commonest bacterial flora cultured from the hands examined was staphylococci, and the cultures obtained were found to vary in different persons, both as regards their number and in their degrees of pathogenicity. Other organisms, notably the streptococci, were absent, and although *B. subtilis*, *B. proteus*, and *B. pyocyaneus* provided occasional colonies it is unlikely that any pathological effects would have followed their implantation.

These comments reflect but a small portion of the information which Dr. Ernst has laboriously tabulated. He has done a signal service by collecting and by interpreting it with such wise reservations.

Trial of Buck Ruxton

Edited by R. H. BLUNDELL, Barrister-at-Law, and G. HASWELL WILSON, M.D., Professor of Pathology at the University of Birmingham. London: Wm. Hodge and Co. 1937. Pp. 457. 10*s*. 6*d*.

IN May, 1936, Dr. Buck Ruxton was hanged at Manchester for the murder of his wife. His case, aptly edited and documented, has quickly found its way into the Notable British Trials series. The facts will still be fresh in the public memory. Parts of the victim's body, disarticulated with surgical skill and with the obvious intent to defeat identification, were discovered in a ravine near the main road from Moffat to Edinburgh on Sept. 29th, 1935, together with parts of another female body. The latter proved to be that of Mary Rogerson, nursemaid to Ruxton's children. The two women had been missing for a fortnight. In his frenzied attempt to cover up his tracks the murderer made many crude errors. There were the blood-stained carpets and clothing at his house in Lancaster, the recognisable garments wrapped round the human remnants in the ravine, the false statements about the women's movements, and the utter failure to explain their disappearance

or to obtain corroboration of their departure. These matters would have been fatal to the prospect of acquittal even without the medico-legal evidence. There was a patient reconstruction of the bodies by a team of Scottish experts. Anatomy and dentistry made their contribution. Witnesses like Prof. J. C. Brash and Prof. Sidney Smith of Edinburgh and Prof. John Glaister of Glasgow helped to build up a case for the Crown which the defence could not hope to rebut. The editors publish in appendices to their volume the important reports of these experts. Overwhelming in its temperate statement and in its fairness, this testimony was conclusive. On its legal side the trial raised a question of the admission of evidence possibly irrelevant because concerned with a crime not before the jury. Ruxton was tried and found guilty on an indictment for murdering his wife. There was a second and separate indictment, not proceeded with, for murdering Mary Rogerson. Normally a jury must not be given any chance to think a prisoner guilty of one crime because he is accused of another. Strictly, any evidence of the murder of Mary Rogerson would be inadmissible on the indictment for murdering Mrs. Ruxton. The Crown, however, submitted evidence of Mary Rogerson's clothing. Prosecuting counsel referred to the circumstances of her death, the garments which helped to identify her as having been in a particular place on a particular day, her disappearance from the house on the same day as Mrs. Ruxton, and finally the intermingling of their remains in the same parcel; the identification of one body, he contended, must be admissible as contributing to the identification of the other. Mr. Justice Singleton admitted the evidence while warning the jury that the trial solely concerned the death of Mrs. Ruxton.

The joint editors of the book, a barrister and a professor of pathology, tell the story soberly without extravagance of sentiment or drama. Their introduction mentions that the original form of Buck Ruxton's name (changed by deed poll) was Bukhtyar Rustanji Ratanji Hakim, and that the dead woman known as Mrs. Ruxton had not in fact been married to him. The editors offer a brief but interesting speculation on the history of the Cyclopean eye, not demonstrably human, which was discovered during the search in the ravine. There is apparently no reference to any inquest on the remains of the women's bodies. Did no coroner hold an inquisition before burial? Or did Mr. Justice Singleton, by virtue of his inherent jurisdiction as a High Court judge and acting *super visum corporis*, perform the function of coroner to avoid further publicity in the story of Buck Ruxton's ghastly crime?

GENERAL REGISTER OFFICE

IT seems a far cry from clandestine marriages by disreputable clergymen and from the growing grievances of rising nonconformist bodies to the present science of vital statistics, but the documents now being exhibited at Somerset House and the brochure[1] issued in connexion with this exhibition show that it was largely these two factors which led to the foundation of the General Register Office a hundred years ago. During the first half of the eighteenth century an extensive traffic arose in irregular though legally valid marriages in connexion with the Fleet and King's Bench Prisons, with the Mint in Southwark and the May Fair Chapel. This traffic is illustrated at Somerset House by entries in the registers of Ashwell, Gainham (the "Bishop of Hell"), and others of their kidney. The majority of these marriages were not perpetrated in a place of worship at all, but in taverns and brandy shops in the neighbourhood, of which "Mrs. Silver's Brandy Shop, the Harrow and Dunghill" seems to have been a well-named example, or in private houses kept as "marriage shops," and no effort appears to have been made to determine the competence of the parties to marry, even the names of the bride and bridegroom often being omitted from the registers. To remedy this disgraceful state of affairs Lord Hardwicke's Act of 1753 laid it down that a marriage to be valid must be performed in a church by a clergyman of the Church of England, Jews and Quakers alone being exempted. This Act led to an understandable and increasing grievance on the part of nonconformists, which successive governments attempted to remedy, but actually the bar to nonconformist marriages was not finally removed until 1837.

A third factor which led to the passing of the Registration and Marriage Acts of 1836 was the lack of any satisfactory system of registration of births, marriages, and deaths. Parochial registration of baptisms and burials had been introduced by Thomas Cromwell in 1538, but this included only members of the Church of England and nonconformist bodies kept their own registers. The increase in the numbers and importance of these bodies in the seventeenth and eighteenth centuries rendered the parochial system less and less complete, and the absence of legal validity of the nonconformist registers seemed more and more unjust, especially as these latter were often most conscientiously kept, as the examples now on view clearly show. The demand for a central and uniform system of registration ultimately led to the appointment in 1833 of a select committee of the House of Commons, which reported in favour of State registration of births, marriages, and deaths, to be performed by lay registrars with a "General National Office." In 1836 the Registration and Marriage Acts were passed, creating a service of local registrars supervised by a Registrar-General, and giving legal validity to the religious marriages of any denomination and to civil marriages in the local register office. These Acts came into force on July 1st, 1837, when the General Register Office may be said to have begun its official existence.

In addition to its function of registration, the General Register Office also took over the supervision of the Census enumerations, the first four of which, taken in 1801, 1811, 1821, and 1831, had been carried out by the parish overseers with the help of local church and other officials. The magnitude of this task at the present day is illustrated by the exhibition of one volume of the 1931 returns, and the brochure states that there are 31,322 such volumes, weighing some 180 tons.

At its foundation the General Register Office was fortunate and wise enough to obtain the services of William Farr, who was responsible for the statistical abstracts of the Department for the incredible period of 40 years, until his retirement in 1879 at the age of 72. The subject of vital statistics does not, unfortunately, lend itself to illustration in a concrete form, and of this branch of the Department's activities the brochure can only advise *si monumentum requiris, circumspice* in any library where its publications are displayed.

[1] The Story of the General Register Office and its Origins. From 1538 to 1937. H.M. Stationery Office. Pp. 30. 6*d*.

THE LANCET

LONDON: SATURDAY, JULY 10, 1937

DIGESTIVE TROUBLES OF OMNIBUS WORKERS

BEFORE initiating investigations of the incidence of sickness from particular causes in industries, a subject on which controversial views are inevitable, the Industrial Health Research Board adopt a sound procedure. They set up a special committee to determine the best means of carrying out the inquiry, and upon this committee are represented, in equal numbers, the employers and the employees in the industry concerned. To these are added a number of scientific workers representing the statistical committee of the Medical Research Council and the Industrial Health Research Board itself. The advice of the industrial members ensures that when the inquiry is planned due weight is given to factors which from their intimate knowledge of the industry they hold to be important. The advice of the expert members ensures that the inquiry is carried out strictly in accordance with scientific requirements and that the report finally drawn up is impartial. This procedure has apparently worked with smoothness and success three times in the past, and has resulted in reports of great value to particular industries. It was applied to the problems of cotton-weaving operatives, in Lancashire, in factories using some method of artificial humidification[1]; to that of the relatively and curiously high death-rates of printing operatives from tuberculosis[2]; and to the investigation of the liability to respiratory diseases of workers employed in the preliminary processes of cotton-spinning mills.[3] This is known as cardroom workers' asthma, and since the issue of that and subsequent reports a departmental committee has been appointed to consider the question of compensation.

Three years ago a similar type of problem was placed before the Board—namely, the alleged excess of gastric illness amongst omnibus workers. It is now well known that these workers believe themselves to be particularly liable to such illnesses, and one or two appeals to statistics have appeared in print. There had, however, been no adequate study of the busmen's claim, and the Industrial Health Research Board believed such an investigation to be fully justified. With this view the London Passenger Transport Board and the Trade Union of Transport and General Workers were in agreement. A special committee was accordingly set up composed of three representatives from the Transport Board, three from the Trade Union, and three scientific members. Mr. A. BRADFORD HILL, D.Sc., who was responsible for the previous inquiries into sickness incidence made by the Board, was appointed secretary to the committee, and has carried out the inquiry for it. His report, unanimously accepted by the committee, has now been published, and its principal features are set out on p. 97. His main conclusion is that there was, in 1933–35, some excess of gastric illness recorded among omnibus workers as compared with the tramway workers chosen as a control group. Acting, no doubt, on the committee's decision to ignore the problem of causation until the question of incidence had been investigated, Dr. HILL makes no comment upon his results but states clearly and concisely what he has found. It might be argued that since at the ages at which the gastric sickness is relatively high the total sickness of the omnibus workers is not high, there is therefore little need for concern. On the other hand, it may be that the total sickness experience is favourable because the omnibus workers at the younger ages are a selected body of physically fit men; that the relative excess of particular forms of sickness is, therefore, the more important; and that the apparent deterioration in the health of the men with age is the result of a more onerous occupational environment. It is interesting to note, as perhaps having some bearing on causation, that the sickness incidence on the tramway drivers, both from all causes and from gastric causes, differed but little from that on the tramway conductors. The omnibus conductors had a distinctly more unfavourable incidence than the omnibus drivers both from all causes and from gastric causes.

It is, however, made clear in the report, that the difficulty of interpreting a recorded sickness-rate which is the end-result of many influences is enhanced "when it comes to investigating common everyday illnesses in which the same terms may be used as a cloak for a number of ill-defined complaints." The report is quite likely to arouse more controversy than it settles. At any rate, the Board have good reason for their belief that this inquiry, with its numerically large mass of data, forms a valuable contribution to the question at issue. The fact that the Board were able to make an investigation with the coöperation of both employers and employees before the question became a matter of public controversy is a feather in their cap, and they have been particularly fortunate in having Dr. BRADFORD HILL to conduct the inquiry.

[1] Industr. Hlth Res. Bd. 1927, London, No. 48.
[2] Industr. Hlth Res. Bd. 1929, London, No. 54.
[3] Industr. Hlth Res. Bd. 1930, London, No. 59.

TRYPANOSOMIASIS AND CHEMOTHERAPY

As recently as the beginning of this century no drug was known that would arrest the progress of sleeping-sickness. In 1905 H. W. THOMAS, working at the Runcorn research laboratory of the Liverpool School of Tropical Medicine, suggested the therapeutic trial of the French proprietary arsenical, Atoxyl, which he had found to have a remarkably trypanocidal action on experimental infections of mice with *Trypanosoma gambiense*. This suggestion not only offered a new hope but may be said to have given rise to a new industry; for EHRLICH,

having examined THOMAS's results in Runcorn, returned to Germany and began his great work on the production of arsenicals for the treatment of sleeping-sickness and syphilis, and in so doing established the foundations of modern synthetic drug manufacture. The new arsenicals, however, were not without serious defects. Even in moderate doses they often proved highly toxic; their therapeutic action was uncertain in the later stages of the disease and when they failed to cure they readily gave rise to arsenic-resistant strains of trypanosomes; and they were impotent against all stages of infection with *T. rhodesiense*. It was in 1920 that HAENDEL and JOETTEN reported on an entirely different trypanocide, Bayer 205. This remarkable product, containing no arsenic, proved to have an astonishingly powerful action on both *T. gambiense* and *T. rhodesiense*, but unfortunately experience showed that it would not bring about cure in the later stages of sleeping-sickness—probably because it has a low diffusibility into nervous tissue. In the following year L. PEARCE of the Rockefeller Institute showed that the new pentavalent arsenical, Tryparsamide, just discovered by JACOBS and HEIDELBERGER, had a curative power in the later stages of Gambian sleeping-sickness very definitely greater than that of the older arsenicals. Experience confirmed this claim, but in other respects this drug has the disadvantages of its forerunners. Since that time the search for improved compounds has continued, and recent additions to the arsenical armamentarium include the French preparation, Orsanine, described by FOURNEAU and his collaborators in 1923, and the English compound, Neocryl, prepared by MORGAN and WALTON in 1931, and introduced into therapeutics by YORKE and MURGATROYD.[1]

Hitherto the steps taken to estimate the value of new trypanocides have been as follows. First their action is tested against experimental infections in small laboratory animals in which trypanosomiasis is a readily observed septicæmia. Drugs emerging successfully from this first examination are then tested against experimental infections in larger animals in which the disease is a tissue infection resembling human trypanosomiasis. Finally the more promising compounds are submitted to the crucial test against natural infections of man. Since Bayer 205 is extraordinarily effective in the earlier stages of sleeping-sickness the search for new trypanocides has narrowed to the production of compounds that are equally sure and certain in the later stages. Those concerned in the search will therefore be interested in a method of estimating the efficiency of drugs used for syphilis or trypanosomiasis of the central nervous system that has lately been described by HAWKING, HENNELLY, and QUASTEL[2] of the Cardiff City Mental Hospital. At intervals after the administration of various arsenicals to man these workers withdrew cerebro-spinal fluid and estimated its power to kill trypanosomes in vitro by means of the technique devised by YORKE and MURGATROYD. Simultaneous chemical determinations were also made of the total arsenic content of the fluids. It was found that after administration of 3·0 grammes of tryparsamide the total arsenic content of the cerebro-spinal fluid, measured chemically, is at a maximum after 14 hours and falls off rapidly during the next 40 hours, whereas the trypanocidal power, measured biologically, while considerable at 14 hours reached its maximum in 40 hours and became almost inappreciable after 80 hours. At its peak the trypanocidal titre was such that the fluid diluted on an average 4–8 times and occasionally 16–32 times killed trypanosomes in vitro within 24 hours. Now tryparsamide is relatively inert in vitro, and if all the arsenic had been present as tryparsamide it could have had no effect upon the trypanosomes. YORKE and MURGATROYD[3] have adduced evidence that the pentavalent arsenicals owe their therapeutic activity to their reduction to the trivalent form, and HAWKING, HENNELLY, and QUASTEL conclude therefore that the trypanocidal activity found in the cerebro-spinal fluid after administration of tryparsamide is due to the reduction of the pentavalent arsenic of the tryparsamide to the active trivalent form; and on somewhat slender evidence they suggest that the active compound is derived from reductions occurring in the brain itself. The trypanocidal activity of the cerebro-spinal fluid bears no definite relationship to the total quantity of arsenic in it, which indicates that the ratio of arsenic present in the trypanocidal trivalent form to the total arsenic present varies from patient to patient (ranging, they find, from 25 per cent. to 1 per cent.). After administration of orsanine similar effects were observed, but the power of this drug to render the cerebro-spinal fluid trypanocidal seemed as great as, if not greater than, that of tryparsamide. This appeared to be due not to its greater penetration but to the larger proportion that was reduced to the active form. On the other hand, the trypanocidal titre of the fluid after administration of neocryl was but slight, and since, judging by the total arsenic determinations, this compound reaches the brain, the investigators assume that it fails to be converted into the trypanocidally active condition. This is noteworthy because YORKE, MURGATROYD, and others[1] found neocryl apparently beneficial in neurosyphilis, and LESTER[1] reported definite improvement in 12 cases of Nigerian sleeping-sickness treated with the drug. MURGATROYD has since confirmed this initially beneficial effect in a large number of cases of Gambian sleeping-sickness. The explanation of the discrepancy between the laboratory and clinical indications is not obvious. It may be that the original clinical benefits will not be sustained, but it is too early yet to express an opinion on this. In HAWKING, HENNELLY, and QUASTEL'S experiments none of the arsenobenzols examined had an activity in the spinal fluid comparable with that of tryparsamide or orsanine. In view of this low activity it is somewhat surprising to find that

[1] Yorke, W., and Murgatroyd, F., *Brit. med. J.* 1936, **1**, 1042.
[2] Hawking, F., Hennelly, T. J., and Quastel, J. H., *J. Pharmacol.* 1937, **59**, 157.
[3] Yorke, W., and Murgatroyd, F., *Trans. R. Soc. trop. Med. Hyg.* 1935, **28**, 435.

the average arsenic content of the fluids should have been as high as it was; for this class of compound is itself trypanocidally active in vitro and does not require any modification by the tissues for its activity, as tryparsamide does. It is suggested that the inactivity of the arsenic in the spinal fluid after a dose of an arsenobenzol is probably due to its conversion to an inactive condition by oxidation or by combination with tissue components.

This method of examining trypanocidal drugs invites speculation. The original dream that therapeutic action might be linked with and predicted from chemical constitution has only been realised partially, and further advances may well come from the examination and correlation of the physicochemical properties of existing drugs. Finally it may be observed that modern chemotherapy, though comparatively newly born, has already produced powerful weapons against such deadly diseases as sleeping-sickness, syphilis and other spirochætoses, and leishmaniasis, and is now giving us fresh hope in the contest with bacterial infections. At a time when interest in this science is reawakening it is gratifying to look back upon its international development and to realise how much the peculiar problems of tropical medicine and their study have contributed to its progress.

PHYSICAL EDUCATION IN GERMANY

LAST November ten British delegates, five of them from the Board of Education, went as guests of the German Government to study physical training. Every facility was given both to the delegation and to its members to pursue, apart from the full official programme, whatever lines of inquiry suggested themselves, and there was never any hint of restraint. The delegation's observations and inferences form an absorbingly interesting report [1] issued as a pamphlet by the Board of Education.

The extent and range of physical training in Germany are in themselves impressive evidence of what can be achieved—in Germany. But differences of national temperament, history, and political conditions have to be constantly borne in mind in comparing what is being done there with what is being done, and what it might be desirable to do, in England. The connexion between politics and physical training in Germany has always been very close. JAHN (1778–1852) "the father of German gymnastics" was an ardent and bitter politician, and the gymnastic and physical training clubs that sprang up all over Germany through his teaching soon became suspect to METTERNICH and the Holy Alliance because of their political liberalism. They were finally proscribed, JAHN himself being thrown into gaol and it was not until some twenty years later, in 1842, that the right of association for physical training was generally allowed. The clubs were immediately re-formed and since that time every political party, whether of the Right, Centre, or Left, has tended to have its physical training associations as a matter of course. No wonder then that at the first mass meeting held by the National Socialists, in 1920, one of HITLER'S twenty-five articles of policy included "increasing bodily efficiency by obligatory gymnastics and sports, and extensive support of clubs engaged in the physical development of the young." The whole population is now under legal or moral obligation to train. Both in school and university, physical training is given as important a place as that held by academic subjects and is compulsory for all but the medically unfit. Most schools in the towns have at least one gymnasium generously equipped with fixed and movable apparatus; all children have to change into gymnastic dress and it is likely that soon six class-periods a week will be devoted to the subject. In the universities eighteen months' training and the attainment of a certain number of marks are necessary before a student may proceed to the second half of the second year of academic study.

Beside this foundation of training for the young there are the more specialised organisations, systematically endowed with glamour, which the aspiring young German enters if he is able. The oldest of these, the Hitler Youth, is closely connected with politics. One of its objects, apart from physical training of all kinds, is undoubtedly the spread of Nazi principles among the young; "and in this," the report says, "it must be regarded as having been eminently successful." No boy is actually forced to join but anyone who has not passed through the movement is in future to be permanently barred from a professional career in the service of the State. The subjects of instruction are ordinary physical training and gymnastics, small-bore rifle or air-gun shooting, outdoor sport, and also where possible motoring, sailing, aviation, and gliding. The boys take themselves very seriously, being taught "that their organisation is one of the main bulwarks of mighty Germany, the country which is the sole prop of order and hope of civilisation in a collapsing world." From their ranks are drawn the children for the resident Napoli schools (National Political Establishments) which train selected boys for political, military, and other posts of responsibility. The eight years' course has as its first aim the cultivation of healthy hardy bodies; secondly the formation of character and training in leadership; and last and avowedly least important, to give the pupils proficiency in book knowledge. A particular feature of the course is a period of six months spent away from the school, working in mines or on the land.

For the non-Jewish Germans of any age there is the organisation known as "Kraft durch Freude" (Strength through Joy) viewed by the delegation as "the most agreeable and possibly the most instructive phenomenon of the Third Reich." It seeks to teach the worker sensible ways of occupying his leisure; it continually reminds him that he has the right to demand of the State that it shall cater for his leisure in his manhood as it catered for his education in his childhood. Actually

[1] Physical Education in Germany. London: H.M. Stationery Office. Pp. 78. 1s.

the organisation offers an enviable choice of occupations at very low charges: they include among many others riding, tennis, ski-ing, sailing, camping, rowing, and even romping for mothers and children. The report suggests that the actual cost of the classes is largely covered by the small charges but that the large expenditure on organisation and propaganda must be met from the trades union contributions which are one of four or five statutory deductions from every German's pay. Two other organisations mentioned in the report, though not strictly to be classed as physical training, are the compulsory labour service at camps for all youths at about the age of eighteen, which improves health by giving the youths work out of doors, and the Land Year scheme for adolescents (14–15 years) which familiarises town children with the work and life of the country.

The principal differences between the German and English methods of physical training are that while we aim at developing all parts of the body in an harmonious way, in Germany stress is laid on exercises of natural function in which apparatus-work and sports and games play an important part. We emphasise correct posture and precision of movement, but the German does not specially encourage stylish gymnastics and his work often appears rough and ready. In Germany pluck and determination count for more than the manner of performance. The delegation comment on the fact that no very great number of cases of poor physique were seen although nearly all those seen at work in schools must have been born during the blockade period, the more or less anarchic period after the war, or in the inflation period. In general the school population gave the appearance of being not less well nourished than the school population in England. Although the Germans were at pains to maintain that the training was not military in character, many of its features were thought to have that flavour: "whether the aims of the movement (Hitler Youth) are at present consciously militaristic or not, there is no doubt that they can, and that instantly, be given a definite militaristic turn if the powers that be in Germany at any time so wish." Another criticism is that the present German preoccupation with physical training may go too far; it is unlikely that in this country the imposition of so much training irrespective of an individual's bent would be considered a happy balance of mind and body. But whatever our criticisms we can but envy the immense opportunities that the German State offers its citizens for cultivating health, and the burning will to health and good physique that seems to live in the German population of to-day. Such intensity could be achieved only in the service of something greater than self.

ANNOTATIONS

FOOD AS A FUGUE

IN a recent broadcast[1] Dr. Carnwath remarked: "I sometimes think that what we want is someone who will take food as Sir Walford Davies takes music, tell us what the simple elements mean and how they can be built up into a harmonious whole, and then each local authority should have a specially trained visitor who will be prepared to show the mother in her own home how with the simple means and appliances at her disposal she can apply this teaching, and perhaps thus in time we shall get housewifery raised to the high esteem in which it should be held." The suggestion is an attractive one and the analogy, at any rate up to a point, is sound. To the ordinary listener, who might be described as the consumer of music, the basis of musical appreciation consists in learning how to enjoy combinations of melodious sound. He is not, in his capacity of consumer, concerned with the production and still less with the physics of sound; wave-lengths and amplitudes mean nothing to him. Similarly, to the ordinary consumer of food, eupepsia and successful nutrition do not depend on an appreciation of proteins and carbohydrates. A good meal is a poem to the creation of which art and skill are more essential than a knowledge of calories and vitamins. Without going all the way with Stephen Leacock, who once lightly suggested that in any decent household all these things were washed down the sink before the food was put on the table, our aim should be not to cumber the mind of the ordinary consumer with technicalities but to present him with the fruits of research. We should, in fact, teach him to think in terms of harmonious combinations of beans and bacon. It seems, however, that Dr. Carnwath's suggestion relies to no little extent on finding Sir Walford's personal charm in a man of scientific standing with the equivalent of a concert performer's technique in cooking and a composer's art expressed in marketing. Such a man might be able to raise more enthusiasm for his art and to show the subject in better perspective than many talks on pure theory or on the strictly practical aspect. Though he could scarcely follow the musician's example and broadcast examples of good food during his talk, his teaching would undoubtedly be widely acceptable and a useful aid to the pride in housewifely ingenuity which is hard put to survive the handicap of the washing up. Many housewives, too, would welcome expert teaching in cookery in their own homes, but the aptitude for household management, like most other attainments, is only gained slowly. But something should be done about it for, as Lord Dawson last week remarked, it is the lack of education in the choice and the cooking of food that is largely to blame for the present under-nutrition. People simply did not know how to choose food within the reach of their earnings; failing this knowledge they lived on tinned fish, tinned vegetables, and other things which needed no cooking. It was not that the housewife was unwilling to cook; often she had never been taught how to cook. One of the best investments the Government could make would, Lord Dawson thought, be to provide travelling vans to go about the country, stopping here and there to give practical lessons on the choice and cooking of food. Dr. Carnwath holds that the best approach to the problem is through the child. Teach the school-child to know and appreciate good food and good cooking and when he is older he will demand—and get—them.

[1] Are We Well Fed? By Dr. T. Carnwath, deputy to chief medical officer, Ministry of Health and Board of Education. *Listener*, June 2nd, p. 1091.

MOBILISATION OF JOINT FRACTURES

"Le mouvement, c'est la vie" was the motto that appeared on the title-page of a book, published in 1895, in which Lucas-Championnière, the first French surgeon, also, to advocate Lister's methods, maintained that immobilisation of fractures is in some respects a false ideal. Although few surgeons ever agreed with the extreme views expressed by Lucas-Championnière, it is partly the result of his writings that the importance of movements in restoring the function of a broken limb is now so widely recognised. It is true that the modern tendency is toward more complete and prolonged immobilisation, but movements are by no means neglected. Even Böhler, one of the strongest supporters of the unpadded plaster cast, emphasises the necessity not only for the movement of all joints free to move but also for the active contraction of all the muscles acting on the immobilised joints of the injured limb, and his system is a failure when these conditions are not faithfully observed.

It is everyone's experience, however, that the movements required in the early period of treatment are often hindered or even prevented because the patient finds them so painful; and the difficulty is greatest in just those cases where prolonged immobilisation is most undesirable—i.e., where fractures involve joints. A way out of this difficulty is suggested by Leriche [1] who has devised a method for use in joint fractures without displacement "or with a displacement not requiring exact reduction." [2] Immediately after the diagnosis has been confirmed, and the extent of the injury defined, by radiography, pain is abolished by the injection of novocain into the ligaments and periosteum around the fracture, and the patient is instructed to move the joint through as big a range as possible. The infiltration and exercises are repeated every day for a period lasting up to a fortnight. Passive movements of the anæsthetised joint are absolutely prohibited. In practice the method is said to be successful and the results very good, especially as regards freedom from stiffness of the joints. One great advantage is that the patient's confidence is quickly restored when he finds he can move the injured limb without pain, and he is thus put in the right frame of mind to coöperate with the surgeon and to help himself towards full recovery in the shortest possible time. At the spring meeting of the British Orthopædic Association reported on p. 96, Dr. Kiaer of Copenhagen reported good results from local anæsthesia, with active movements, in the treatment of joint contractures and of recent sprains.

Leriche claims that this method rests on a sound basis. He describes how an injury to a joint is followed immediately by constriction of its vessels, caused by reflex stimulation via the sympathetic; how vasodilatation soon follows, owing to an inhibition of the sympathetic; and how this vasodilatation lasts as long as impulses can pass from the irritated sensory nerve-endings of the injured joint. It is this state of vasodilatation which he considers responsible for most of the bad results of joint injury, such as œdema and synovial effusion, hyperplasia and excessive vascularisation of the synovial membrane, thickening and stiffening of the ligaments, decalcification of the bones and calcification in the soft tissues—in short, most of the causes of the chronic arthritis and periarthritis that often follow joint injury and cause so much disability. Leriche has studied the histology of these processes, and has observed similar results, presumably caused by vasodilatation, in the joints of sympathectomised limbs. His belief is that his method of treating joint fractures not only allows the patient painlessly to perform those movements that will restore the function of the limb as a whole, but also cuts off at their source those stimuli that would reflexly cause permanent damage to the joint itself.

[1] Leriche, R., *Pr. méd.* June 12th, 1937, p. 873.
[2] Leriche, R., and Froelich, F., *Ibid*, 1936, **44**, 1665.

ŒDEMA AFTER BREAST OPERATIONS

INTERRUPTION of lymphatic drainage of the arm, with resulting œdema, is a serious disadvantage of the radical operation for carcinoma of the breast, and one that is not at all easily avoided altogether. At its worst œdema causes suffering and disablement; it has even necessitated amputation of the arm. Possibly the dissection of the axilla is sometimes too thorough, and the vessels are stripped too completely. In other words, a more radical operation is performed than that originally designed by Halsted. Some degree of œdema of the arm is probably almost unavoidable unless the preservation of the lymphatic drainage of the arm is kept in mind. Reinhoff [1] accordingly proposes a modification of the radical operation in which a fan-shaped muscle flap of the latissimus dorsi is turned up into the axilla and sutured to the remnants of the origin of pectoralis major muscle. The muscle flap is to act as a lymphatic channel between the arm and the thorax, and Reinhoff believes that lymphatic vessels regenerate between the stump of the pectoralis major and the latissimus dorsi. The flap has the added advantage of filling a subcutaneous dead space that is often left under the upper skin flap. This space is a source of trouble, especially where primary closure of the wound has been effected by stretching the flaps rather tightly. It tends to fill with blood or serum and may become infected, and if infected granulation tissue eventually obliterates the space a firm mass of scar tissue is formed which interferes with movement of the arm, and probably also with the re-establishment of the lymphatic circulation in the injured tissues. So far Reinhoff has done his plastic modification of the radical operation only four times, and his preliminary report is written in the hope of interesting other surgeons. He says that the fashioning and suture of the flap has prolonged the operation by barely ten minutes, that healing and ultimate function have been excellent, and that there has been no œdema. The latissimus dorsi has been chosen as being a muscle very unlikely to be affected with carcinoma.

FLUORESCENCE MICROSCOPY

THE observation of a fluorescent microscopical image formed by illuminating a suitable object with ultra-violet light has been possible for many years, but no great use has been made of what is potentially a valuable means of research. The practicability of the method depends on having an appropriate light source, and this is perhaps the main reason for its limited employment, for the necessary physical equipment is not readily available in biological laboratories. What is required is an illuminant emitting ultra-violet light, which can be separated spectroscopically or by colour-screens from accompanying visible radiations, and a quartz condenser enabling the object to be illuminated in ultra-violet light only. The object should be mounted on a

[1] Reinhoff, W. F., *Bull. Johns Hopk. Hosp.* May, 1937, p. 369.

quartz slide but can be covered with glass, since the image is observed with a glass lens. The image is formed in visible light and it represents the fluorescent response of some object or element of structure. The response, which within limits is characteristic, often presents an amazingly beautiful picture. An alternative method is to stain the object with a fluorescent dye and to observe the image so formed, the response depending on the retention or otherwise of the dye by each element of structure. This method may be selective, as most staining reactions are, but it is in the main based on the facility with which the dye is discharged from or retained by the structural elements.

Hagemann[1] of Cologne describes experiments in which he claims to have demonstrated the presence of virus bodies by staining them with primulin and observing the fluorescent image therefrom. Apparently this fluorescent dye is selective; the virus bodies are shown in contradistinction to other images of structure. Infectious ectromelia, vaccinia, and canary-pox are specifically mentioned, and it is inferred that other viruses may be identified in the same way. If the method does all that is claimed for it, an additional means will be at hand for demonstrating the presence of virus in mass. Thus the presence of virus bodies in cytoplasmic inclusions should be demonstrable, although their demonstration can now be achieved as a rule by other microscopical methods. The formation of the fluorescent microscopical image, although it is formed as the result of illumination by ultra-violet radiation, is still in terms of visible light. The resolution obtainable therefore is that to be expected in using an ordinary microscope.

THE CHEMISTRY OF RED CELLS

IN spite of the recent advances in hæmatology little is known of the chemical constitution of the red cells in health or disease. Apart from determinations of cell dimensions, hæmoglobin content, and resistance to sodium chloride solutions, the few observations published by Maizels[2] last year are all that have hitherto been available. Hence a comprehensive study of the chemical composition of both serum and erythrocytes in normal children and in hæmolytic anæmias, hypochromic anæmia of infants, and Addisonian pernicious anæmia is likely to be useful. A group of workers in Detroit[3-5] have investigated the lipoid distribution and concentration of sodium, potassium, chloride, and nitrogen in both cells and plasma, and related their chemical findings to those involving the physical properties of the red cell—namely, its size, shape, and resistance to both sodium chloride and saponin. Studies of small groups of normal children living under rather different conditions as regards nutrition suggest that red-cell constitution, quite apart from hæmoglobin content, depends, partly at least, on the quality of the diet. This important finding clearly needs confirmation upon larger groups of children. In the hæmolytic anæmias of infancy examined—namely, erythroblastic anæmia of Cooley, sickle-cell anæmia, and acholuric jaundice—the Detroit workers found the potassium: sodium ratio of the red cells decreased below normal, while a relatively large amount of neutral fat was present with a relative percentage increase of the cholesterol esters. In hypochromic anæmia of infancy, on the other hand, the lipoid distribution and potassium: sodium ratio were normal. After splenectomy in acholuric jaundice the cell chemistry was more normal. The red cells in adult pernicious anæmia also contained excessive amounts of cholesterol ester and were deficient in phospholipoid and free cholesterol. The potassium: sodium ratio was decreased. With liver therapy the chemical composition of the cell rapidly became normal. After a discussion of certain aspects of cellular physiology the authors conclude that the changes noted in the hæmolytic anæmias and in pernicious anæmia indicate that the erythrocytes are not only in a state of lowered function or activity but are also degenerating. The absence of such changes in hypochromic microcytic anæmias on the other hand implies that there is no such severe derangement of function in the iron-deficiency anæmias. Twenty years ago pernicious anæmia was regarded as a hæmolytic anæmia. The present study suggests that it must be regarded still as closely related to those anæmias that are thought to be hæmolytic. Perhaps, however, these will lose their title when more is known about their origin.

[1] Hagemann, P. K. H., *Münch. med. Wschr.* May 14th, 1937, p. 761.
[2] Maizels, M., *Biochem. J.* 1936, **30**, 821.
[3] Erickson, B. N., Williams, H. H., Hummel, F. C., and Macy, J. G., *J. biol. Chem.* 1937, **15**, 118.
[4] Erickson, B. N., Williams, H. H., Hummel, F. C., Lee, P., and Macy, J. G., *Ibid*, 1937, **15**, 569.
[5] Williams, H. H., Erickson, B. N., Bernstein, S., Hummel, F. C., and Macy, J. G., *Ibid*, 1937, **15**, 599.

BODY-WEIGHT IN NORMAL AND TOXÆMIC PREGNANCY

THE order of appearance of the three cardinal symptoms of the eclamptic toxæmias varies in different patients, but it is fairly well established that œdema is often demonstrable before albuminuria or hypertension. This is all the more remarkable because the usual sign of œdema—pitting of the subcutaneous tissues on pressure—is a crude test that becomes positive only when fluid-retention is well advanced. The latent retention that precedes obvious œdema is, however, accompanied by a considerable rise in body-weight, and weight-charts are accordingly useful where œdema is anticipated. For these reasons regular weighing is becoming an important part of the routine of the antenatal clinic. The principal difficulty in interpreting such weight-charts comes from the fact that weight is increasing, for various reasons, throughout normal pregnancy and it becomes desirable to determine the limits of the normal increment. Data bearing on this point have already been published, and Dame Louise McIlroy and Dr. H. E. Rodway[1] have recently contributed figures based on 1000 normal pregnancies, in most of which measurements were continued into the puerperium. In addition measurements were obtained in 75 cases of toxæmia, and comparison with the normal group confirms the impression that toxæmia is associated with an abnormal increase in body-weight. The authors believe that excessive gain in weight should be corrected by restriction of diet and increased exercise. It is possible that such measures, besides reducing weight, may also abort incipient toxæmia. But as long as the nature of toxæmia remains as obscure as it is at present there can be no general agreement about its treatment, and some obstetricians would question the wisdom of dietetic restriction during pregnancy.

Advances in endocrinology have revived hope that the cause of toxæmia may become clear before long and that rational means of prevention will follow. If this expectation is realised the need for early diagnosis will become imperative and weight-curves

[1] *J. Obstet. Gynæc.* 1937, **44**, 221.

may become indispensable. It has not, of course, been practicable to print in full the data collected by McIlroy and Rodway; the averages which they have tabulated give useful indications of the general trend of normal and abnormal changes in weight. But statisticians rightly insist that averages are rarely adequate and often misleading. Data of this kind lend themselves admirably to statistical analysis and it may be hoped that some statistician will find time to analyse the figures which these and previous writers have collected, and present the obstetrician with means of deciding whether a given weight-curve is or is not significantly abnormal.

THE "MEDICAL OFFICER" AT HOME

Capt. G. S. Elliston entertained the council of the Society of Medical Officers of Health to dinner at the House of Commons on July 1st. He was moved to do so by two events: one, the fact that the *Medical Officer*, founded by himself and continued by his son, had just completed its 1500th issue; the other that on that very day a hundred years ago had come into force the Registration Act of 1836, creating a service of local registrars supervised by a registrar-general and charged with the duty of registering births and deaths. It was this registration which provided the material on which preventive medicine was securely founded, and he sketched the rapid sequence of events that led to the formation of the Society of M.O.H.'s. Sir Francis Fremantle acted as deputy chairman at the dinner, when an interesting series of reminiscences was interrupted from time to time by the bell summoning chairman and deputy to the division lobby. Medical journalism received an unusual meed of honour and Capt. Elliston's own services as the journalist of the public health service were very properly recognised.

THE GENESIS OF KIDNEY STONES

How renal calculi begin has long been a matter for speculation. Some authorities assume that loose fragments of organic material, probably due to infection, form the nidus for crystallisation, while others believe that the calculi arise from concretions formed in the renal tubules. Lately a new conception has been put forward by Randall,[1] based on his examination of a large series of human kidneys removed post mortem. He found that a certain number showed minute plaques of calcification under the mucous membrane of the papillæ. These consisted of deposits of calcium carbonate in the interstitial tissues and on the basement membranes of the urinary ducts. Generally these deposits were completely embedded in the tissues, but in a few the overlying mucosa was destroyed so that the plaques lay exposed. Concretions of calcium phosphate or calcium oxalate had formed on the surfaces of some of these and were growing into the calyces of the kidney, and Randall concluded that such formations represented the origin of calculi. These observations are clearly important. Calcification of the kidney, as recent experimental work has shown, is associated with disturbances of the mineral metabolism, and lesions somewhat similar to those described by Randall can be produced in rats by a variety of factors ranging from overdoses of vitamin D or hyperparathyroidism to an ill-balanced, though quite adequate, diet. In human pathology renal calcification is especially associated with disturbances of the parathyroid glands and with certain diseases of the bones, and Chown [2] has recently shown that it forms the basis of renal rickets. Randall's findings, therefore, may not only elucidate the origin of calculi but may go far towards explaining their peculiar incidence.

[1] Randall, A., *Ann. Surg.* June, 1937, p. 1009.

IRON METABOLISM

STUDIES of iron metabolism are complicated by the fact that iron is excreted almost entirely in the fæces. Experiments on iron balance cannot give a complete picture of the utilisation and absorption of iron since no distinction can be made between that portion of the iron which passes unchanged through the gastro-intestinal tract and that which has been utilised and re-excreted into the bowel. Nevertheless, workers in this country and America have lately managed to bring forward many interesting facts about the fate of large doses of iron administered by mouth. Brock and Hunter [3] and Fowler and Barer [4] have shown that oral administration of iron and ammonium citrate and Blaud's pill results in retention of large quantities of iron. An average of 32·6 per cent. of the iron administered was retained by the body, according to the latter observers, while only 1·96 per cent. of that administered was utilised in the formation of hæmoglobin. No correlation was shown between the amount of iron retained and the increase in hæmoglobin content. Non-anæmic subjects were found to retain as much iron as patients with hypochromic anæmia—due to hæmorrhage or of the idiopathic type—both when the intake of iron was normal and when large amounts were given. That patients with achlorhydria retain less iron from a normal dietary intake than patients with normal gastric acidity has always been concluded from Mettier and Minot's observations [5] on the reticulocyte response to iron given in a buffered alkali or acid medium. By means of balance experiments Barer and Fowler [6] have now proved this to be true. On the other hand, they found that when large doses of iron were given retention was not influenced by the character of gastric secretion. This observation is at present hard to understand if Mettier and Minot's results are accepted. Administration of hydrochloric acid even in large quantities did not influence the absorption of iron.

Fowler and Barer [4] discuss the bearing of these findings on the possible ætiology of idiopathic hypochromic anæmia. Since patients with this type of anæmia retain iron as well as, if not better than, healthy normals or patients with anæmia due to hæmorrhage, and since the utilisation in hæmoglobin formation is equally satisfactory, they conclude that the idiopathic form cannot be due to a failure of the internal metabolism of iron. They found a consistently negative iron balance in people on a low intake of iron—i.e., below 6·7 mg.—and suggest that such an iron-poor diet might theoretically account for the degree of anæmia. On the other hand, they state that few of their patients had been taking such a poor diet. Reduced iron intake, they therefore conclude, may be a theoretical cause of anæmia, but in practice is not necessarily the only cause. Even in patients with achlorhydria which reduces

[2] Chown, B., *Canad. med. Ass. J.* 1936, **35**, 134.
[3] Brock, J. F., and Hunter, D., *Quart. J. Med.* 1937, **6**, 5.
[4] Fowler, W. M., and Barer, A. P., *Arch. intern. Med.* 1937, **59**, 561.
[5] Mettier, S. R., and Minot, G. R., *Amer. J. med. Sci.* 1931, **181**, 25.
[6] Barer, A. P., and Fowler, W. M., *Arch. intern. Med* 1937, **59**, 785.

iron absorption they believe there must be some additional and at present unknown factor.

Neither Brock and Hunter[3] nor Fowler and Barer[4] have any evidence either as to the site of storage or use of the enormous quantities of retained iron.

MATERNAL MORTALITY AND PAIN SAVING

POSSIBLE means of reducing maternal mortality are receiving as much attention in the United States as they are in this country. A writer in the *Journal of the American Medical Association* for May 15th dealt with one cause of preventable deaths that was of formidable dimensions in the series of fatalities he was considering, but does not, we fancy, play a large part in the causation of deaths during confinement in Great Britain. This factor is the agent employed for obstetric amnesia, analgesia, and anæsthesia. Dr. T. L. Montgomery denounces the use of spinal analgesia in midwifery, and finds that the barbiturates are not as free from danger as they are often represented to be. He deplores the fact that according to his evidence the accoucheur seemed often so bent on getting his patient asleep that he gave little thought to the outcome of his hasty procedure. The paper deserves perusal by practitioners engaged in midwifery practice, for the present demands, both professional and lay, for "painless labour" are sometimes made by those who do not sufficiently weigh the risks that may be involved in securing absence of pain. "Safety first" does not apply only to road traffic; but fortunately safety and analgesia are seldom incompatible if suitable methods are used.

IMPERIAL SOCIAL HYGIENE CONGRESS

A FULL and varied programme was arranged for the members of the Eighth Imperial Social Hygiene Congress who met at Caxton Hall, London, S.W., this week. The congress, over which Mr. L. S. Amery presided, was organised by the British Social Hygiene Council in a dozen sessions, some concurrent. The subjects of debate included international aspects of social hygiene, such as traffic in women, and the welfare of seamen in ports; official and voluntary coöperation in health education; venereal disease in rural areas at home and overseas; the welfare of the mercantile marine; family life and recruited labour; the training of nurses overseas and for overseas service; and nutrition in relation to education, agriculture, and medicine. To-day, Friday, the discussions will turn on the child and the institution, and marriage in relation to social hygiene. The men and women chosen to open up each subject are experts, and the opinions expressed and the suggestions made by them are well worth pondering. Mr. E. E. Ekstrand, director of opium traffic and social questions section, League of Nations, maintained that the system of regulation of prostitution, after having been undermined for many years, is now everywhere collapsing. Even in the East it is now being recognised that licensed brothels offer no guarantee against infection which cannot be certainly detected by a routine periodical examination of prostitutes.

Mr. E. F. Outen, late director of public instruction, Bengal, spoke wisely of the necessity of coördination in public service; voluntary work to be effective must be in organised harmony with all other agencies aiming at the same ends, in partnership with the State and in matters of high policy under its direction.

Mr. R. E. Hopton, late Government specialist in venereal diseases, Cyprus, expressed the dissatisfaction felt in many countries with the treatment of venereal disease in rural as opposed to urban areas, and outlined different schemes organised in Cyprus and in Southern Rhodesia to cope with this problem. Dr. Margaret Balfour, lately chief medical officer, Women's Medical Service, India, raised the question whether, especially in backward communities, it would not be possible to train and employ married women as nurses. In all training-schools, she notes, it seems to be taken for granted that the nurses must be single. This point is perhaps worth consideration, at any rate in countries where a severe shortage of nurses is felt. Mr. W. Bryant Mumford, head of the colonial department, Institute of Education, University of London, made some provocative suggestions as a basis for discussion between administrators, educationists, and anthropologists. His theme was the desirability that educational philosophies designed for application in the African dependencies should be devised not by Europeans, for Africans in a spirit of patronage, but by Africans, in conjunction with Europeans, for the well-being of the Africans themselves. This communication was typical of the breadth and humility of the modern approach to problems of social hygiene. Congresses conducted in this spirit of inquiry and freedom from dogmatism have great propaganda value.

THE RETURN VISIT

BRITISH surgeons this week returned the visit of French surgeons to London last summer.[1] The party, which numbered 30, included Sir Cuthbert Wallace, president of the Royal College of Surgeons of England, Sir Holburt Waring, past president, and several other members of the council. On Monday morning they visited the Institut du Cancer at Villejuif directed by Prof. G. Roussy, dean of the Faculty of Medicine of Paris. In the afternoon they attended a demonstration of recent surgical research in the hall of the Académie de Chirurgie. In the evening the Académie entertained their guests at the Hotel Ritz. Tuesday morning was occupied with visits to various operating theatres. In the afternoon the Castle of Chantilly was thrown open and the treasures of the Château and of the Musée Condé were shown by M. Henri Malo, conservator. The order of officer of the Legion of Honour was conferred by the President of the Republic on Sir Cuthbert Wallace, Mr. G. E. Gask, and Mr. H. S. Souttar, who took a leading part in establishing this entente chirurgicale.

THE recruitment of nurses for mental hospitals is one of the most difficult questions with which the visiting committees of these hospitals have to deal. The feeling that all is not well led the Mental Hospitals Association to refer a report on the subject to a joint committee of the Association and the Workers' Union, acting on this occasion as a Whitley council. The committee reported last May and its conclusions were circulated to members of the Mental Hospitals Association which is holding its 19th annual meeting at the Guildhall, London, on Tuesday next, July 13th.

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[1] *Lancet*, 1936, **2**, 1486.

EXTENSIONS AT THE GENERAL HOSPITAL, NEWCASTLE-UPON-TYNE.—An extensive programme of additions and improvements at this hospital has been planned by the health committee at an estimated cost of £272,000. A new main block for children, a medical ward of 80 beds, a surgical ward of 90 beds, a surgical tuberculosis and thoracic surgery block of 80 beds, and an additional wing to the nurses' home form part of the scheme, and application has been made to the Commissioner for Special Areas for a grant.

SPECIAL ARTICLES

MEDICINE AND THE LAW

Medical Opinion and the Assessment of Damages

THE commonest type of civil action in the law courts is a claim for damages for injuries due to a motorist's negligent driving. Naturally the legal advisers of the parties rely greatly upon the opinions of the medical experts—how serious are the injuries and how far are they permanent? If the defendant (usually with an insurance company at his back) offers a sum in settlement, will the plaintiff be wise to accept it? If the action proceeds and the defendant pays a sum into court, had the plaintiff better take the money? If he goes on with his claim and recovers less than the amount paid in, he will have to pay the costs incurred after the moment at which he could have taken the greater sum paid in. It is rather a gamble. Who can say what a jury will not award, if its sentiments of sympathy towards the injured plaintiff are skilfully played upon by an eloquent advocate? Experienced counsel may be able to gauge what a jury will give; but nowadays the juries are largely being eliminated and it is common gossip in the Temple that a judge, sitting alone without a jury, may award damages with a more surprising generosity than a jury would have displayed. Barristers in a confidential mood will sometimes classify particular judges as "plaintiffs' judges" and others as "defendants' judges." Clearly it is a ticklish business to advise a defendant how much he should pay into court; it must be the smallest amount possible of course, and yet it must be big enough to succeed in tempting the plaintiff to take the money and discontinue the claim.

Two recent cases show how hard it is to foresee what the plaintiff will recover. Last week Mr. Justice Atkinson was trying the claim of a woman who had been injured in a traffic accident. He awarded £65 and then was told that as much as £225 had been paid into court by the defendant motorist. The judge was inclined to scold not only the advisers of the plaintiff for not having accepted the offer of £225, but also the advisers of the defendant. "If," he said to the motorist's counsel, "on your medical advice £225 was the proper sum to pay in, then the evidence given for the defence to-day has been grossly misleading." The defendant's medical witnesses, if they really thought £225 was a fair sum for the plaintiff to recover, had been unfairly minimising her injuries in the witness-box since the result of their evidence was that only £65 was awarded. In the other case, Roach *v.* Yates, a bricklayer aged 32 had been struck from behind by the defendant's car when on his bicycle. He had been an athletic man in good employment. He had played Rugby football up to his 31st year, and now, as the result of the accident, he had serious brain injuries from which he would never recover. For the rest of his life he would need two people to look after him; he was suffering from traumatic dementia and epilepsy. Mr. Justice Hilbery awarded him £2750 damages (including £542 special damages); but the Court of Appeal has increased the sum to £6542. Delivering the judgment on appeal, Lord Justice Greer conceded that it was not easy to put a figure on what Roach had lost by being converted from a healthy athletic man who enjoyed life into what was very nearly a hopeless lunatic through injury to the brain. His life had been shortened and ruined and the accident had turned him into a member of society who could earn nothing at all for the rest of his days. "It is not possible adequately to compensate the appellant for what he has lost through the accident." The three judges of the Court of Appeal, it seems, had independently come to the figure of £6000 for general damages in addition to the special damages of £542. This was the first time that the Court of Appeal has taken upon itself the extremely difficult task of assessing the damages in an action for personal injuries. It will be interesting to see if the decision encourages a flood of appeals from plaintiffs dissatisfied with the amount awarded them. The Court of Appeal usually declines to interfere merely because its members would themselves have awarded a greater or less amount than was in fact awarded at the original trial. It does not intervene unless the trial judge has applied some wrong principle in assessment or unless the amount is such as no judge or jury could reasonably have awarded.

Shortened Expectancy of Life

An additional element of difficulty has arisen since the Law Reform (Miscellaneous Provisions) Act of 1934 enabled all causes of action subsisting against, or vested in, any person to survive against his estate or for the benefit of his estate as the case might be. In Roach *v.* Yates the figure of damages included something for the shortened expectation of the plaintiff's life. If he had died, his estate could have claimed damages on that ground too. This point was established a few days ago by the decision of the House of Lords in Rose *v.* Ford. Mabel Rose, aged 23, was seriously injured by a negligent motorist on August 4th, 1934, ten days after the new law received the Royal Assent. On the 6th it was necessary to amputate her right leg; on the 8th she died of her injuries. During the four days after the accident she lay for the most part in a state of coma—scarcely, we may assume, able to let her mind dwell on the shortening of her life. She lost her leg, but for two days only. How were these items of damage to be assessed? Mr. Justice Humphreys in the first instance awarded £500 for pain and suffering and for the loss of the leg; but he refused to award any damages for loss of expectation of life. He thought the only ground for such damages was the mental suffering of the girl at the shortening of her prospect of life; she had been unconscious for long periods after the accident and, in his view, no such pain or suffering had been proved. In the Court of Appeal all three judges agreed that the trial judge went wrong in thinking that, in the 1935 decision in Flint *v.* Lovell, the reason for awarding damages was mental pain and suffering from contemplation of the loss. There was, it will be seen, a problem of legal metaphysics; was the damage objective or subjective? All three judges held that there could be no damages for loss of the leg except for the loss of the use of the limb for the four days after the injury. They cut down the £500 award to £22—namely, £20 for Mabel Rose's pain and suffering and £2 for the loss of the leg. Lord Justice Greer, in a minority judgment, thought there ought to be some award for loss of expectation of life and he assessed the sum at £1000. His two colleagues thought themselves bound by a decision of 1917 (the Amerika case) whereby a plaintiff was held unable to recover damages if his wife or servant was

killed by the negligence of a third party. But the two judges in the majority were willing to accept their colleague's figure of £1000 in the event of the plaintiff being legally entitled to recover on this point. In the House of Lords Lord Justice Greer's view was upheld and the sum of £1000 was deemed recoverable. Lord Atkin emphasised that a living plaintiff can, and frequently does, recover damages for diminished expectation of life; the 1934 Act vests the cause of action in the injured person's personal representatives if he dies; the estate of Mabel Rose was therefore entitled to damages for shortening of her prospect of life even though she had not initiated any claim in the courts before she died. "I am satisfied," said Lord Atkin, "that the injured person is damnified by having cut short the period during which he or she had a normal expectation of enjoying life, and that the loss or *damnum* is capable of being estimated in terms of money and that the calculation should be made." Lord Atkin hinted that it might be a peculiarly difficult calculation. Should, for instance, a rich man be deemed to have had greater opportunities of pleasurable enjoyment than a poor man? Into these speculations the House of Lords did not further enter. Lord Justice Greer's figure of £1000 held the field; how it was reached we are not told. However carefully a medical expert may report upon a case, however elaborate the actuarial calculations, we may expect that the result will be just a good round sum.

Legal Qualifications for London Coroners

The London County Council decided last Tuesday to abandon the excellent rule whereby London coroners have been required to possess both a legal and a medical qualification. Henceforth only a barrister or a solicitor will be eligible, though due weight will be given to the possession of experience as deputy coroner and of knowledge of forensic medicine. The L.C.C. makes this change out of deference to a recommendation put forward in the report of the Departmental Committee on Coroners last year. The suggestion was one of a series of highly controversial proposals for which it is perhaps significant that the Home Office has so far shown no sign of inviting Parliamentary acceptance. The suggested requirement of solely legal qualification is obviously bound up with other proposals for limiting the scope of the coroner's inquisition, and for restricting the evidence to be offered, for which there is no reason to believe that the public is anxious.

It was stated at the meeting on Tuesday that all London coroners were doctors who had qualified as barristers, and that, when men were found with the dual qualification, they were sure to be doctors who had "a mere paper qualification." The medical applicant may still be capable of appointment by virtue of his experience as deputy. After the present generation, however, it seems that no doctor need apply. So long as the issues which arise at inquests are medical and surgical in their nature, so long will training in medicine and surgery be helpful to the tribunal. The change will be widely regretted. Nothing in the conduct of metropolitan inquests offers it any justification.

BURNHAM-ON-SEA MEMORIAL HOSPITAL.—Instead of erecting an entirely new hospital it has been decided to add a Coronation wing to this hospital at a cost of £4000. This is half the amount estimated for the more ambitious scheme, and £3000 is already in hand.

BRITISH ORTHOPÆDIC ASSOCIATION

A SCANDINAVIAN CONGRESS

THE British Orthopædic Association, under the presidency of Mr. W. R. BRISTOW, held its spring meeting in May, in Copenhagen and Stockholm.

COPENHAGEN

Three days were spent in Copenhagen, of which two were devoted to visiting the new orthopædic hospital on the outskirts of the city, where an attractive programme had been arranged by Dr. Paul Guildal and his colleagues. In Copenhagen the orthopædic service is financed by the State and the medical staff are all salaried officials.

Dr. GUILDAL spoke on the orthopædic treatment of *infantile paralysis*, in which his practice and results closely correspond with those of the visitors.

Dr. BENTZON advocated the use of *drilling osteoclasis* in preference to osteotomy for the correction chiefly of outward curvature of the tibiæ due to rickets. Through a tiny incision multiple drill-holes are made in a transverse line at the apex of the deformity. The bone is then broken manually or with an osteoclast. Dr. Bentzon hoped that this simple operation would restore osteoclasis to favour and indicated that experience would probably show that it had an even wider field of application. He then demonstrated the result of an operation for *gluteus medius palsy*. The procedure consisted of transferring the insertion of the upper two-thirds of the gluteus maximus upwards and forwards to occupy a true lateral position on the crest of the ilium. The patient whom he showed was able to walk without a trace of limp and could stand on the affected leg with perfect balance.

Dr. KIAER made some remarks on the treatment of *joint contractures*. He had found very helpful a combination of infiltration of the capsule of the affected joint with local anæsthesia and active mobilisation. Similar methods could be employed usefully in the treatment of recent sprains and of painful scars. He then showed two patients who had been treated for *sciatic scoliosis*. Immobilisation of the lumbosacral spine in plaster-of-Paris jackets, applied with the patient suspended or bending forwards, had given the most satisfactory results.

Dr. STAERMOSE gave a brief review of *coalitio calcaneo-navicularis*. Though it was certain that in many people this condition represented no more than a symptomless anatomical anomaly, it was occasionally found in association with spasmodic flat-foot. Excision of the bridge between the two bones and the interposition of part of the muscle belly of the extensor digitorum brevis usually cured the peroneal spasm.

Dr. FOGED showed many results of operations for *torticollis*. The most universally satisfactory procedure had been open division of both heads of the sternomastoid just above the clavicle followed by a long period of daily stretching and re-education.

Dr. CHIEVITZ spoke on the geographical distribution of tuberculosis in the Danish population and discussed the relationship between human and bovine types in surgical lesions. The majority of these were due to the bovine type.

A brief symposium on *osteoarthritis of the hip* followed. Dr. MORVILLE dealt with the classification of the disease. Dr. BERNTSEN described his method of

drilling ("forage") the femoral neck and head—the procedure described originally by Graber-Duvernay. Very considerable relief of pain had followed this simple operation in over 60 per cent. of his series of patients suffering from osteoarthritis of the hip. Dr. THERKELSEN analysed the indications for, and results of, "shelf" operations performed in adult life for congenital subluxations of the hip. Unlike British surgeons, he had found the operation satisfactory in relieving pain and increasing stability.

STOCKHOLM

Two mornings were spent at the new Karolinska Institutets Orthopediska Klinik Vanföreanstalten, where Prof. J. H. Waldenström and his colleagues and assistants presented a most stimulating programme.

Prof. WALDENSTRÖM showed his best results of *arthroplasties* on various joints and these evoked much applause. Concerning arthroplasties in general, he said:

"The treatment is as we all know difficult. But the difficulty lies not only in carrying out the operation skilfully, but as much in deciding which cases are suitable to operate on. It should be undertaken only on the earnest request of the patient and only after the surgeon has assured himself that the patient will really get more use from a mobile joint than from his present stiff one. We keep all these patients in hospital for some time before making a decision, not only for the purposes of physical examination but also, which is still more important, to get an impression of their mentality and their reaction. The post-operative treatment is painful, and the patient must not only submit to passive movements, but he must also carry out energetic active ones many times each day in spite of pain."

Later he presented some of his views on certain hip conditions of which he has made a life-long study.

These included *coxa plana* (pseudocoxalgia) and *coxa magna-valga-luxans*. He attributes the latter to a mild local inflammatory process, possibly tuberculous in some patients, which results in overgrowth of the femoral head, so that it is no longer contained completely within the acetabulum. He also performed the operation which has been most successful in his hands for *recurrent dislocation of the shoulder*—i.e., the insertion of an autogenous bone graft into a niche along the anterior margin of the glenoid (Eden-Hybbinette operation).

Dr. FRIBERG read a paper on *spondylolisthesis* which is now being recognised more frequently in Sweden. When it was causing symptoms he advocated fusion of the slipping vertebral body to the spinal segment immediately distal to it, through an abdominal transperitoneal approach. He performed his own modification of this operation on a patient during the meeting.

Dr. KNUTSSON gave an account of the radiological findings in *sacralisation* of the fifth lumbar vertebra. He pointed out that symptoms could arise not only from arthritis in the joint between the sacralised transverse process and the sacrum, but also from arthritis in the smaller intervertebral joints of the lower lumbar segments. Dr. Knutsson also demonstrated radiograms of many other bone and joint conditions. The high standard of radiographic achievement in this clinic was commented on by the visitors.

Dr. SILFVERSKIOLD described the condition known as *chondromalacia patellæ* and its treatment. He regarded it as the commonest form of internal derangement of the knee and believed that the cartilage of the patella was the first in the body to undergo degenerative changes. The clinical picture was crepitation between the patella and femur on movement, associated with attacks of pain and swelling and peripatellar tenderness. For mild lesions he advises conservative measures and for more advanced ones, excision of the damaged cartilage in part or in whole, covering the raw area with a free fascial graft. About 70 patients had been operated on and the majority had perfect function. Some of them were demonstrated.

Dr. NILSONNE showed some of the results of the operative treatment of infantile or *congenital coxa vara*. He had performed a wedge osteotomy in the trochanteric region on the surprising total of 60 patients suffering from this condition. His best results were in those patients on whom the osteotomy had been done between the ages of six and eight. In these circumstances successive radiograms showed that the femoral neck had reconstructed itself over a number of years until eventually the hip could not be distinguished from the normal either by clinical or X ray examination.

Miss HOJER, director of the Cripples Educational and Training Establishment, spoke on the arrangements in Sweden for the rehabilitation of the cripple and his disposal in lucrative occupation. The whole scheme—which embraces workshops, boarding-schools, and salaried social workers—is subsidised by the State grants up to about half of the total expense.

Other short papers were read on the *syndrome of the scalenus anticus and cervical rib* by Dr. WIBERG, on *congenital ulnar deviation of the fingers* by Dr. LUNDBLOM, and on the results of the shelf operation for *congenital subluxation of the hip in adults* by Dr. SEVERIN.

INCIDENCE OF DIGESTIVE DISTURBANCES IN BUS-DRIVERS AND CONDUCTORS

VARIOUS occupational factors have been put forward at one time or another as responsible for an excess of digestive disturbances amongst busmen—irregularity of mealtimes, "speeding up" with added nervous strain, cramped and unchanging posture at work, the inhalation of carbon monoxide from the exhaust fumes. The special committee of the Industrial Health Research Board whose report has just been issued [1] took the view that it would be extremely difficult to direct inquiry into these or any other causes until the question of incidence had been settled. The initial investigation had, therefore, to be statistical. An answer was sought to the basic question "do omnibus workers suffer from digestive complaints more frequently or more severely (or both) than other groups of workers of similar economic and social position?" As a sickness-rate is the end-result of many influences, much care had to be given to the choice of the group that was to be used as a standard of comparison with the busmen. The choice finally made was the tramwaymen who in the opinion of the Trade Union representatives on the committee were less prone to gastric illness than the busmen.

[1] An investigation into the sickness experience of London Transport Workers, with special reference to digestive disturbances. Industr. Hlth Res. Bd. No. 79. London: H.M. Stationery Office. 1937. Pp. 33. 6d.

For these two groups of operatives was extracted (from the sickness records of the London Passenger Transport Board, available under the National Health Insurance Acts) the sickness experienced over five years, 1925–26 and 1933–35. It was considered that the results would be more reliable and more rapidly obtained if attention were devoted only to the more serious illnesses experienced; the periods of illness utilised were thus all those of 15 days or more, the relatively large mass of short periods of incapacity being ignored. Even with this limitation it was necessary to analyse over a million and a quarter days of sickness. By taking out the records for the earlier years, 1925–26, Mr. A. Bradford Hill, D.Sc., who undertook this analysis for the Board, hoped to see whether the sickness incidence had changed in type and volume with changing conditions of work and environment. This proved impossible, as the diagnosis of the cause of sickness was missing in a very large proportion of the earlier periods. His analysis is, therefore, confined to the 853,284 days of illness recorded in the later years, 1933–35, for which a diagnosis of cause was available. The diagnosis that had perforce to be used was that given by the panel practitioner on the first certificate of incapacity. Dr. Hill admits that wide errors may result even when a broad group of diagnoses are taken as one comprehensive gastric group, but he argues that there is no reason to suppose that the errors are more numerous in one occupational group than another. A special small-scale investigation of the question gave support to this argument. He also points out (p. 8) that what has been investigated is what has been termed "gastric" on the panel doctors' certificates, and whether those diagnoses ought in fact to relate to, say, diseases of the nervous system is not in this inquiry very material. The answer to the initial question must be simply that busmen do or do not suffer unduly from diseases attributed to gastric causes by their medical attendants. Hospital data would undoubtedly give a more accurate account of causes of illness, but for several reasons it was concluded that such data are "an unpromising, if not impracticable, means of inquiry." In general Dr. Hill concludes that the unreliability of the diagnoses available cannot be readily invoked as an explanation of the differences he finds between the sickness attributed to gastric causes amongst the omnibus and the tramway operatives.

The differences found are these: At all ages, making allowance for the different age distributions of the groups of workers, the omnibus drivers had in 1933–35 a relative excess of gastric sickness—i.e., in proportion to sickness from all causes—of 12–14 per cent. over the figures shown by the tramway drivers; the omnibus conductors had a relative excess of 15–18 per cent. over the figure shown by the tramway conductors. Put in another way, roughly one day in six and a half of the total days of sickness—i.e., sickness of over two weeks' duration—was attributed to gastric causes amongst the omnibus workers; if they had had the same experience as the tramway workers the ratio would have been one day in seven and a half.

The relative excess of gastric sickness amongst the omnibus workers varies considerably with age. With the drivers it was apparent only at the ages 30–49 at which it amounted to some 20 per cent.; with the conductors it was mainly derived from ages 20–39 at which it amounted to 34–35 per cent. At these ages the sickness experience of the omnibus workers from all causes was not unfavourable in comparison with that of the tramway operatives. At the older ages of working life both the total and the gastric sickness experiences of the omnibus workers were in excess of those recorded by the tramway groups, but there was no evidence of a relatively greater liability of the former to gastric illnesses. The age-groups in which the relative excesses of gastric illness was found amongst the omnibus workers are numerically important. Dr. Hill points out that about three-quarters of the total number of omnibus drivers are of ages 30–50 and about two-thirds of their conductors are of ages 20–40.

His final conclusion is, therefore, as follows:—

Taking only sicknesses of over two weeks' duration and a wide group of diseases as attributable to gastric causes (and the original data did not, it was held, justify any subdivision of this group) it is found that there was, in 1933–35, some excess of gastric illnesses recorded amongst the omnibus workers as compared with the tramway workers in those age-groups to which the majority of the former belong, though at these ages the total sickness experience, from all causes, of the omnibus workers was rather more favourable than that of the tramway workers.

SCOTLAND

(FROM OUR OWN CORRESPONDENT)

ABOLITION OF HOSPITAL FEES

AT a recent meeting of the public health committee of Edinburgh town council, it was proposed that "fee-paying in the city of Edinburgh hospitals, as far as Edinburgh ratepayers are concerned, should be abolished." It was pointed out that if a ratepayer was unable to pay 25*s.* a week, he was relegated to public assistance and his case was investigated as if he were a pauper. The charge brings in only £20,000 a year, which corresponds to 1*d.* in the £ on the rates. After further information has been collected, the matter is to be reconsidered by the committee.

Many complaints are made about the necessity for paying hospital fees at the municipal hospitals. One reason for these complaints is that the chief hospitals of the city are voluntary, and these as yet make no charge to patients. The public are in fact accustomed to having the very best hospital facilities provided for nothing; and even if the voluntary hospitals were to introduce hospital fees, they would continue to admit certain patients free without making them feel that they were being treated as paupers. On the other hand, if the city authorities abolish hospital fees, the demand for beds in their hospitals will increase greatly. The municipal hospitals are already well filled, and there has been difficulty in obtaining enough nurses. It is unlikely, therefore, that the city authorities will agree to a change that will throw a heavy extra strain on the accommodation now available.

SHORTAGE OF NURSES

The difficulty of finding nurses for the three municipal general hospitals is referred to in Dr. John Guy's annual report as medical officer of health for Edinburgh. Most of those who have studied the problem insist that long hours of work, poor remuneration, undue discipline, and stiff examinations are the main causes which deter girls from entering the nursing profession. Dr. Guy draws attention to another possible factor—namely, the decline in the

actual numbers of females in the 20–25 age-group of the population of the country. The staffing of the hospitals used for the chronic sick, which are not training schools approved by the General Nursing Council, presents peculiar problems. Dr. Guy suggests that a scheme which would enable nurses to divide their period of training between "chronic" and "acute" hospitals would be ideal, for experience in the nursing of the chronic sick is absolutely essential if a nurse is to be fully trained. The alternative is to employ women unfitted for work in an acute hospital or for passing the State examinations but conscientious and considerate to the patients. Those who are in touch with hospitals for chronic cases know how serious the difficulty of staffing them has become; unfortunately there is no sign of the situation improving, indeed it may become worse. It is difficult to see how it is to be met.

VETERINARY SCIENCE

Speaking at the annual prize distribution of the Royal (Dick) Veterinary College, Edinburgh, Prof. W. T. Ritchie first paid tribute to the genius and patriotism of William Dick, who founded a veterinary hospital 114 years ago. The preservation of health was now the common aim of veterinary and medical practitioners: the veterinarian waged incessant war against tuberculosis, and was the first line of defence against foot-and-mouth disease, anthrax, glanders, and hydrophobia. It was a good omen that the Treasury were becoming increasingly sympathetic to the endowment to research in animal diseases.

Sir Thomas Hudson Beare, who presided, referred to the steady increase of students at the College, and the inadequate accommodation now available. The Development Commissioners last year offered £20,000 provided the College raised a similar sum, and he made an appeal for further subscriptions.

MENTAL HYGIENE

Mr. Clifford W. Beers gave an address at Edinburgh University last week, in which he described the improvements that have taken place in the treatment of mental disease during the past thirty years. Prof. D. K. Henderson, in introducing the speaker, said that Mr. Beers had a long and painful and serious illness thirty years ago. After recovering he told his story in his book—"A Mind that Found Itself." He then founded the mental hygiene movement, which had developed so greatly that 54 countries were represented at the congress in Washington in 1930.

HONOUR FOR LADY MACKENZIE

On July 2nd the degree of LL.D. was conferred on Lady Mackenzie, C.B.E., widow of Sir Leslie Mackenzie, who was medical member of the Scottish Board of Health from 1919 to 1928. At a meeting held a few days previously at the Carlyle Hostel, Lady Salvesen presented Lady Mackenzie with academic robes given by friends and fellow-workers and by various organisations with which Lady Mackenzie has been closely connected. The speakers included Dr. J. B. Clark, who spoke about her work for education, and Miss Alexia Jack, who spoke about her efforts to improve the conditions of mentally defective children. In her reply Lady Mackenzie told how, as a member of the School Board in 1906, she had secured the appointment of the first school medical officer in the city. His salary was provided by saving £400 a year on the arrangements for washing school towels.

IRELAND

(FROM OUR OWN CORRESPONDENT)

MEDICAL MEN AND THE GENERAL ELECTION

ALTHOUGH the complete returns of the election are not available at the time of writing, the fate of some if not all of the medical candidates is known. The last Dáil contained six medical men; the new Dáil will contain at least seven. Of these seven three sat in the last Dáil—namely, Dr. James Ryan, Minister for Agriculture, Dr. C. Ward, parliamentary secretary to the Minister for Local Government and Public Health, and Dr. T. F. O'Higgins. Of the others three have been members of Dáils previous to the last—namely, Dr. F. Humphries, Dr. Myles Keogh, and Dr. S. Tubridy. A newcomer to the Dáil is Dr. Joseph Hannigan, who has been returned for the Southern division of the City of Dublin. Two medical members of the last Dáil have been defeated—Dr. J. J. O'Reilly, who sat for County Cavan, and Dr. P. J. O'Dowd, who sat for County Roscommon—and two other medical candidates have met the same fate—Dr. W. O'Sullivan in County Kerry and Dr. P. Doyle in Leix-Offaly.

PANEL AND CONTRACT PRACTICE

The Extension of Health Insurance

BROADSHEET 102 issued by PEP[1] is chiefly devoted to the question "whether, and if so how, the very serious gap in the provision through health insurance of medical services for the mass of the population can be filled." It is held that the medical services now provided are deficient in three important respects: (1) the quality of the service that can be given under present conditions by a busy insurance practitioner "is far below the best that modern medical practice could provide"; (2) there is no specialist treatment, apart from the very limited provision made under the additional benefits; and (3) the insurance system does nothing for the dependants of the insured, or for persons who though not eligible for insurance are of the same economic class as the insured. The broadsheet deals only with the third shortcoming, which, it is thought, is the most serious. The need for this extension of the health insurance system is so generally recognised that large numbers of those who would be affected by it are now attempting to find a substitute in various methods of voluntary insurance. In addition to some 50 public medical services providing medical care for over 400,000 persons, there are doctors' clubs, friendly society medical services, works' clubs, and various other "contract" arrangements all trying to meet a need that could more effectively and economically be met under the State scheme. The number of dependants of insured persons in Scotland is estimated by the Government Actuary at 1,570,000, and if the ratio of dependants to insured persons is the same in England and Wales as in

[1] *Planning*, June 29th, 1937. Political and Economic Planning, 16, Queen Anne's Gate, London, S.W.1.

Scotland the total number of dependants in Great Britain would be 14,600,000. The cost of extending medical benefit to dependants is estimated by *Planning* at £8,800,000 on the assumption that the capitation fee would be 9*s*., and the cost per head of drugs, mileage, and administrative charges 4*s*. It is suggested that the cost should be shared equally between the State and the insured persons, which would increase the weekly contribution by 1·3*d*. Mr. Colin Clark, in "National Income and Outlay," estimates that the number of workers in Great Britain earning less than £250 per annum but outside the insurance system is 1,030,000; and if medical benefit were extended to these persons and their dependants, estimated at 900,000, the cost, allowing a capitation fee of 9*s*., would be £1,160,000. Assuming the cost to be shared equally between the workers and the State, it would entail a weekly contribution of 2·6*d*. from each worker. The total cost of extending medical benefit to these workers and their dependants, and to the dependants of the insured, would on these calculations be £10,000,000, of which the State would pay £5,000,000.

This estimate is probably too low, since the allowance for drugs is based on the Scottish cost, 1*s*. 11½*d*. per person, and the cost in England and Wales is 3*s*. 1*d*. But accepting it as not far out, it may be argued that the money could be more profitably spent in other ways—e.g., the provision of adequate diets for young children or an extensive development of nursery schools. This question is reserved for consideration in a Report on Health Services shortly to be issued by P E P. But without leaving the field of health insurance it may reasonably be doubted whether the extension of the existing restricted range of medical services over a wider section of the population is the development that is most needed. The first criticism of the insurance medical service made by P E P is that the quality of the service given by "a busy panel doctor in contemporary conditions is far below the best that modern medical practice could devise." Though it is incorrect to assume that the efficiency of an insurance practitioner varies inversely with the size of his practice, for some of the most effective work is done in the larger practices, it must be admitted that taking the service as a whole there is need for a higher standard of professional work. The Royal Commission on National Health Insurance recommended that the first development of the insurance medical service should be to supplement it by coördinating the work of the practitioners with that of colleagues experienced in special fields of practice. This the Commission thought would not only enlarge the range of service but improve the efficiency of the practitioners. It may well be that it would be better to improve the quality of the existing service before increasing the quantity of work required from it. This, however, does not detract from the value of this useful broadsheet, which is full of interest to medical and non-medical readers.

The Varying Quality of Mercy

A year ago the London medical service subcommittee dealt with thirteen practitioners who had been consistently remiss in returning forms of medical record relating to insured persons who had transferred to the lists of other doctors. Several of these doctors admitted that they had disregarded the ordinary applications for the return of medical records and had awaited schedules of outstanding records after the end of the quarter, but upon having received promise of amendment the committee decided in one case only—and that in respect of a practitioner who had twice previously been before the subcommittee—to recommend the withholding of money, and then only to the extent of £1. More recently a London practitioner submitted no acceptances for six months and then sent in 101 medical cards. Although he had been warned previously, he was let off with a homily, the committee indicating that a repetition of the offence would compel a more serious view of the matter. A doctor in the Isle of Ely has received different treatment from his local insurance committee. A special meeting of the medical service subcommittee was convened, we learn, for the purpose of considering the questions of delay on the part of the doctor, and following a detailed statement concerning accepted medical cards, recommended, and the committee decided, in connexion with the seven medical cards received on a day in February, that the Minister should be asked to withhold £5. At this rate the London doctor ought to have had £70 withheld. But worse was to follow, for this practitioner had been remiss in returning medical records. For this misdemeanor the committee decided to recommend the Minister to withhold £15. The last word lies with the Minister, who will no doubt be aware of the varying quality of mercy. Practitioners must realise that the prompt submission of acceptances and medical records is not merely a troublesome piece of red-tape but is an essential part of a rather intricate machine.

The National Formulary

The British Medical Association is to be asked to consider the issue of a revised edition of the National Formulary. The London medical benefit subcommittee in making this request points out that the 1933 issue of the formulary brought it into line with the B.P. 1932. The subsequent publication of the B.P. Codex (1934) had modified the position considerably; the Codex had been adopted in April, 1935, but the drug tariff standards had remained as they were. Preparations bearing the same name in the two publications might differ in composition, and the same name might be used for two different preparations. Other factors to be taken into consideration are the Pharmacy and Poisons Act, 1933, various alterations in the Dangerous Drugs Regulations, and the B.P. Addendum of 1936.

THE LANCET 100 YEARS AGO

July 8th, 1837, *p.* 544.

From an article entitled "Facts regarding the Statistics of Insanity. (Abridged from Browne on Lunatic Asylums.)"

. . . females are, perhaps, most subject to insanity, both before and after the consummation of marriage. This has been attributed to their peculiarity of constitution, delicacy of frame, and susceptibility of mind; but, if this set of causes be confined in their operation to women, so is a large proportion of the physical causes, and the influence of ambition, speculation, and dissipation, confined in their operation to men. No explanation of the inequality can be received on these grounds. The vicious and imperfect education of females, however, may afford "an open and easy road for the enemy to enter," tending as that education does, in the majority of cases, to arrest the development of the body, overtasking some of the mental powers, and leaving others untouched and untaught, while, so far as it is moral, it is directed to sordid and selfish feelings, and substitutes a vapid sentimentalism for a knowledge of the realities and duties of life.

GRAINS AND SCRUPLES

Under this heading appear week by week the unfettered thoughts of doctors in various occupations. Each contributor is responsible for the section for a month; his name can be seen later in the half-yearly index.

FROM A READER

II

THE study of tricks designed to add undeserved prestige to ideas and arguments has been unduly neglected. More attention has been paid to the allied phenomenon of intellectual snobbery, and this preoccupation has obscured the merits of the lesser art as material for the serious student. The two vices are by no means identical; intellectual snobbery is practised for the glorification of the thinker, but prestige is stolen for the glory of the thought. Stealing is perhaps too sharp a word, for the practitioners may be unconscious of their misdeeds. Like shop thieves, they may be either moneyed kleptomaniacs or needy professionals: so the vice may appropriately be named prestige-lifting. It may be observed in its most primitive form when the truth of a not too credible statement is boldly supported by the declaration that it appeared in a newspaper. I am chiefly concerned with its more complex manifestations in the scientific world. The favourite terrain of the prestige-lifter is in relatively watertight sciences like physics or mathematics. To biological workers the prestige of these sciences is enormous: to the average reader mathematics, for example, has not only the hall-mark of exactitude but the impressiveness of the unfamiliar. Time and again have I seen medical students recoil from a scientific publication that displays mathematics no more complex than fourth form algebra; and yet cheerfully tackle a purely descriptive paper that is, if they only knew it, a far tougher nut to crack.

The lure of the graph, the fascination of the formula—all the biological journals testify to these. I am far from denying the value of expressing a result in terms of an algebraic function, which may be a highly convenient restatement of a fact. But few are content to stop at that. The fact that a set of results fits a formula means no more than that a set of results fits a formula: it may suggest more; unfortunately it often suggests too much. The astronomers, some of them, have been struck so forcibly by the neatness with which the stellar universe has fitted their mathematical conceptions, that they have been led, in Prof. Hogben's words, to award God an honorary degree in mathematics.

Unfortunately mathematics implies exactitude, which some may think too high a price to pay for prestige. The resistance to the recent suggestion that medical students should acquire some idea of the bases of statistical reasoning is not difficult to understand. For medical men, with the living reality at the end of the stethoscope or under the tip of the scalpel, rather resent the tyranny of the algebraic symbol. A good many medical arguments are weighted by observations that are not directly relevant, but appear to be so because there is a tacit assumption of premises which are in fact unwarrantable: and to strip a hard-won conclusion of all but its quantitative values often reveals a woefully inarticulate skeleton.

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Nowadays there is a good deal of perfectly legitimate adoption by one science of techniques belonging to another; but though much prestige is lifted by misapplied energy in this direction, it is scarcely worth more than noting in this survey. The literary side (using the term as a convenient label for all non-scientific attempts to communicate something) is rich in prestige-lifters.

Mountaineering would appear to have a good enough raison d'être as a sport; and yet occasionally in the records of some climb one finds insistence on the valuable scientific results that are alleged to justify the conquest of a peak. In one account of a Himalayan expedition, the author, who in the introduction laid particular stress on the scientific side, solemnly explained that the oxygenation of the tissues depended "on the number of hæmoglobins in the blood." The feebleness of the claim to science lies not so much in the ludicrous mistake as in the failure of the writer to take the trouble to get his statement verified. This striving after scientific prestige is the more surprising since mountaineering has developed a strong religion-prestige of its own. Its growth is reflected in the mountaineering literature of the past eighty years. Whymper scrambled in the Alps because he was commissioned to make a set of engravings of scenery and John Tyndall, at any rate partly, because of his interest in natural philosophy. These pioneers just liked mountains. Later in the nineteenth century the natural desire to be the first up a peak is sublimated into a conviction that only in the quiet untrodden places can the unpleasant, rope-festooned, guide-bullied tourist be avoided. (The grumbles of the mountaineers about the invasion of their haunts by the vulgar reveal a naïve blindness to the consequences of publishing their exploits.) So far, glimpses of the cult of exclusiveness appear only occasionally in the writings of mountaineers. But in the beginning of this century the climber emerges as one having a peculiar code of behaviour and an ethic. There is that which urges the soul of man to impose himself on the lonely peaks (by a masterly under-statement, the more inaccessible and impressive mountains become "high hills") and the peaks, by a pantheistic reciprocity, bring out something fine in the climber. Mountain worship now is well established. I have heard a priest of the cult exhorting a gathering of undergraduates to keep the flame bright and untainted: the necessity for the exhortation being, apparently, that with the increasing cheapness of communication and travel, the lower classes were becoming mountaineers for the sheer vulgar delight of climbing mountains.

* * *

The finest examples of prestige-lifting can be found among those who, in a final analysis, are Science's bitterest opponents. At the time of the American Civil War, the southern States chose the romantic fantasy of race-purity as the scientific support for their political attitude. Land- and slave-owning conferred on the lately settled immigrants aristocratic qualities that forever separated them from the up-to-date pushing Yankee. The Nazi, more obscurely, uses the fantasy to justify a return to one of the cruder Norse mythologies. The annals of the stockbreeder are richer in prestige than the turgid prose of Houston Stewart Chamberlain, and the menace of the non-Aryan is a better reason for choosing a blond and

virile giant for a Leader than all Carlyle's panegyrics on Hero-worship.

* * *

Perhaps it is paucity of imagination that lies at the bottom of most prestige-lifting. Any communication of organised knowledge, made with a minimum of ambiguity, *is* scientific, and outside this realm there are few convincing approaches to that hypothetical reservoir of intuitively apprehendable knowledge postulated by the mystics. Poetry, painting, music are all pressed into service, but man cannot convince by Art alone.

Mary Eddy boldly appropriated the word "Science" for a title, and couched the whole of her religious argument in the form of a scientific thesis, with the full paraphernalia of discussion, conclusions, and finally experimental proof. No facet of the scientific method is omitted, except mathematical demonstration. In one place the narrative is interrupted for an explicit statement of the fundamental premises of her system, set out as a kind of manifold syllogism or a problem in inference,

> "God is All-in-All
> "God is good, God is mind
> God, Spirit, being all, nothing is matter"

with a final conclusion that matter is nothing. Mathematics is not entirely neglected, for "the metaphysics of Christian Science, like method in mathematics, proves the rule by inversion. There is no pain in Truth, and no truth in pain," and so on until we arrive at "There is no matter in good and no good in matter."

* * *

D. H. Lawrence was more explicitly anti-science, but none the less noteworthy as a scientific prestige-lifter. He formulated the doctrine that the mind should be the tool, not the master, of the body and its emotions. For the most part he was content to let his novels preach for him, and the earlier ones, like "Aaron's Rod" and "The Lost Girl," mirror his spiritual development. Both begin with clear, mentally apprehended pictures of his early life in the Midlands, and finish in dealings with foreigners into whose incomprehensibility he could read the workings of dark, primal energies. The Mexican Indians eventually became for him the symbol of living, as opposed to thinking, humanity. He would have been angry at any attempt to rationalise their mystery. But his resentment of the supremacy of mind needed expression through more than his genius as a poet and novelist, and he was driven to make specific repudiations of science. He was revolted, for example, by his own conception of Freudian psychology. He says, "Freud explored with his ideal candle the cavern whence issues the stream (of the conscious)—and came back, with knowledge of the huge slimy serpent of sex, heaps of excrement, and myriad repulsive horrors." In place of this tabloid misconception he offers a psychological system, governed within the body by a tetrad of sympathetic and separatist ganglia, one pair above, the other below the diaphragm, a system with its own peculiar flavour of modern medicine and medieval symbolism.

Angry repudiation often implies a feeling of inferiority, and a clue to Lawrence's attitude may perhaps be found in one of his outcries against the tyranny of scientific fact. It was to the effect that "the moon is not a cold, dead world; it is phosphorus clotted on poles of radium." For all his intuitive comprehension, he had only one scientific image to substitute for another, and in repudiating the cold objectivity of selenologists from Galileo to Nasmyth, he ran straight into the arms of Mme. Curie. He was, in fact, an ignorant romantic. Science threatened an attitude that he was always attempting to support by what were in effect scientific methods. But in his understanding of Science he never got beyond the stage of the Boy's Grand Cabinet of Chemical Marvels, with a book of instructions that reads like a shilling primer of conjuring. Phosphorescence and radio-activity had for him the impressiveness of the slightly bogy-bogy, the interest of something actually happening. He was incapable of seeing that the problems of molecular structure in dead crystals of rock salt might be as fascinating as the luminescence of a grinning skull crudely scrawled in yellow phosphorus on a coal-cellar wall.

THE SERVICES

HONORARY PHYSICIANS TO THE KING

Col. H. C. BUCKLEY, M.D., F.R.C.S. Edin., honorary surgeon to H.E. the Viceroy of India, and Col. D. C. V. FITZGERALD, M.C., L.R.C.P.I., Indian Medical Service, have been appointed honorary physicians to the King, in succession to Maj.-Gen. Sir Cuthbert A. Sprawson, C.I.E., M.D., F.R.C.P. Lond., and Maj.-Gen. C. W. F. Melville, C.B., M.B., F.R.C.S. Edin., Indian Medical Service, who have retired.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Rear-Admiral Percival T. Nicholls, C.B., has taken over the duties of Medical Director-General of the Navy, in succession to Surg. Vice-Admiral Sir Basil Hall, K.C.B., O.B.E., who is retiring after the usual three years.

Surg. Rear-Admiral Nicholls has been 36 years in the Navy, and was promoted to his present rank in 1932. He has been medical officer of Sheerness Dockyard and of Portsmouth Naval Barracks, and has had charge of the naval hospitals at Malta and Haslar, and was in H.M.S. *Hogue* when she was sunk in September, 1914. Subsequently he was medical officer of the *Greenwich*, destroyer depôt-ship, and of the battleships *Agamemnon* and *Valiant*.

Surg. Comdrs. to Surg. Capts.: F. C. Wright (*Drake*) (R.N. Hospital, Plymouth), and H. E. Y. White, C.V.O., O.B.E., K.H.S. (H.M. Yacht *Victoria and Albert*).

Surg. Capt. P. L. Gibson to R.N. Barracks, Chatham, for duty as senior medical officer.

Surg. Comdrs. J. A. Cusack to *Ganges*; W. J. Morris to *Drake* for R.N.B.; and A. W. McRorie to R.N. Recruiting Headquarters.

Surg. Lt.-Comdr. E. J. Mockler to *Victory* for R.N.B.

Surg. Lt.-Comdr. (D) H. N. V. Barnes to *Drake* for R.N.B.

Surg. Lts. F. G. V. Scovell to *Pembroke* for R.N.B.; J. C. Gent to *Victory* for R.N.B.; A. Long and D. Gunn to *Pembroke* for R.N.B.; T. F. Davies to *Pembroke* addl. for R.N. Hospl., Chatham; and R. M. Kirkwood to *Vernon*.

The following have been appointed as Surg. Lts. for short service:—

G. T. Holroyd, St. Thomas's Hospl.; W. H. E. McKee, Trinity Coll., Dubl.; R. T. May, Cambridge Univ. and St. Thomas's Hospl.; B. Ridgway, Bristol Univ.; M. F. Sheehan, University Coll., Dubl.; and W. Wilson, Manchester Univ.

Surg. Lts. (D) J. B. Knight and F. B. Gamblen to *Pembroke* for R.N.B.

ROYAL NAVAL VOLUNTEER RESERVE

Surg. Lt.-Comdr. to Surg. Comdr.: S. B. Borthwick.

Surg. Comdr. G. F. Abercrombie to *Exmouth*.

Surg. Lt.-Comdr. J. F. Heggie to *Drake* for R.N.B.

Surg. Lt.-Comdr. (D) F. D. Manners to *Victory* for R.N.B.

Surg. Lts. W. T. Campbell to *Victory* for R.N. Hospl., Haslar; and E. G. Brewis to *Caledonia*.

ROYAL ARMY MEDICAL CORPS

To be Bt. Col.: Lt.-Col. G. Wilson, O.B.E., M.C.

To be Lt.-Cols.: Maj. E. B. Marsh, M.C., and Maj. E. C. Linton.

Lt.-Col. H. R. Edwards having attained the age for retirement is placed on retd. pay.

Maj. G. A. Bridge, M.C., to be Lt.-Col.

Capt. J. W. Eames to be Maj., Oct. 1st, 1936. (Substituted for the notifn. in the *Gazette* of Oct. 20th, 1936.)

Short Service Commissions:—

Capt. J. H. Caverhill resigns his commn.

Lt. (on prob.) R. L. Townsend is secd. under the prov. of Art. 213, Royal Warrant for Pay and Promotion, 1931, July 1st.

Lt. W. Laurie resigns his commn. July 3rd.

Supernumerary for service with O.T.C.: Lt. S. M. Whitteridge (empld. Univ. of Lond. Contgt. (Med. Unit), Sen. Div., O.T.C.) resigns his commn. June 4th.

General List.—J. E. Wells to be Lt. with seniority June 8th.

The successful candidates in the examination (in written subjects), of officers with a view to promotion in the Regular Army and Dominion Forces, which was held at Stations abroad (excluding India) in March last are:—R. Army Medical Corps: Majors W. L. S. Cox, M.C., W. B. F. Orr and C. E. Eccles; Capts. M. S. W. Bisdee and J. D. P. Macpherson. R. Canadian Army Medical Corps: Major W. L. Coke. Army Dental Corps: Capts. K. H. Coulton and R. H. Green.

TERRITORIAL ARMY

Capts. W. Niven and M. Stoddart-Scott to be Majs.

Lt. C. H. Imrie to be Capt.

K. S. Thompson (late Cadet, Epsom Coll. Contgt., Jun. Div., O.T.C.) to be Lt.

J. R. Heslop (late Cadet Serjt., Barnard Castle Sch. Contgt., Jun. Div., O.T.C.) to be Lt.

ROYAL AIR FORCE

The undermentioned promotions are made:—Squadron Leaders to be Wing Comdrs.: Edwin Noel Hillman Gray, Thomas Vincent O'Brien, Hugh Wolfe Corner, and Frank Paul Schofield. Dental Branch:—Wing Comdr. to be Group Capt.: Lawrence Somerville-Woodiwis. Squadron Leader to be Wing Comdr.: Gordon Arthur Ballantyne, D.F.C. Flight Lt. to be Squadron Leader: Michael Joseph Pigott.

Squadron Leader G. E. Church to R.A.F. Station, Cranfield, for duty as medical officer.

Flight Lts. J. A. Kersley to R.A.F. Hospital, Cranwell; and R. N. Kinnison to Princess Mary's R.A.F. Hospital, Halton.

INDIAN MEDICAL SERVICE

Indian Medical Department.—Lt. (Sen. Asst. Surg.) E. G. Crunden retires, April 7th.

CORRESPONDENCE

THE REVISED MEDICAL CURRICULUM

To the Editor of THE LANCET

SIR,—The letter under this heading in your issue of June 26th from Sir Ernest Graham-Little, Member of Parliament for London University, contains some misconceptions that should, I think, be corrected.

(1) The resolutions of the General Medical Council to which he refers were adopted by the Council in May of last year. In the recent May session the subjects under consideration were the registration of students and the date at which the regulations should come into operation—now fixed as Nov. 1st, 1938.

(2) These resolutions do not prolong the duration of professional study. It is to be, as it has been since January, 1923, five years after passing in addition to matriculation or its equivalent an examination in elementary chemistry and physics. In the University of London no examination in chemistry and physics other than the first M.B. examination is required and the final M.B. can be taken five years after that has been passed, or six years after matriculation. The "new requirement," which has been in operation since 1923, is not "that the student shall complete his education in chemistry and physics before coming to the medical school," but that before he begins the study of anatomy and physiology he shall have a knowledge of elementary chemistry and physics and that the duration of professional study should then be not less than five years.

(3) An academic year is a period from the beginning of October to the end of June, not any period of nine months' duration. Five academic years cannot be completed in less than 57 months. The resolutions specify that during the three clinical years study should not be confined to the months from October to June but should be continuous throughout the year. In London medical schools this has been customary for at any rate more than fifty years. The provision that the period of clinical study should be three calendar years does not add nine months to the curriculum as it is being carried out in the schools of the University of London, nor does it add one.

Perhaps I on my part may have misunderstood Sir Ernest's letter, but it seems to me to imply that a student should be able to become an efficient practitioner without ever having had his attention called to the importance of "dietetics, therapeutics, prescribing, physiotherapy, principles of nursing, child welfare, psychology, radiology as applied to medicine and surgery, disease in infancy and childhood, dental diseases or of the statutory obligations of medical practitioners" all of which he rather misleadingly says have been added to the special subjects of the old curriculum, the one, that is, which is still in force till November next year.

I am, Sir, yours faithfully,

J. B. LEATHES,
Chairman of the Education Committee of the General Medical Council.

Oxford, June 29th.

To the Editor of THE LANCET

SIR,—In your issue of June 26th Sir Ernest Graham-Little says that "the medical profession is becoming practically closed except to those who have abundant financial means." Prof. G. A. Clark replies that this can easily be shown to be an exaggeration by investigation of the occupation of the parents of medical students, at least in provincial medical schools. Perhaps this question can be approached from a different angle.

The bearings of this economic aspect of medical education on the student body are brought out in the recent report of the University Grants Committee for the period 1929–30 to 1934–35. The number of "assisted" students is a guide to their economic status. For the year 1934–35 the following were the

percentages of assisted students to the total of full-time students :—

	Per cent.
Oxford and Cambridge Universities	43·4
London University, excluding Medical Schools ..	34·3
London University Medical Schools	13·7
Provincial Universities and three Independent University Colleges	45·7
England	39·2
Wales	57·0
Scotland	45·1

It is obvious from these figures that at least in the case of the London University medical schools, which are numerically the most important group, the students are not widely drawn from the community, and certainly not nearly as widely as in the case of arts and science students. No separate figures are given for the provincial medical schools but all the figures quoted show a glaring disproportion when comparison is made with the 13·7 per cent. assisted students in the London schools.

The economic aspects of medicine have an important bearing upon its educational problems. The lengthy training of the medical student, the cost of this training, the many years that must elapse before he becomes self-supporting, and also the capital outlay necessary to start practice, all tend to restrict the field from which the medical student is drawn. This restriction is not always obvious but it is quite definite when comparison is made with the faculties of arts and science.

Educationally, medicine is becoming increasingly linked with the university, and to those of us who believe that medicine has educational as well as vocational duties towards the community, the imposition of severe economic tests seems wholly undesirable. The real test of admission as a student should be ability, and not ability to pay. In the other university faculties—arts, science, and theology—economic tests are extremely light when compared to those of medicine. A broader basis of admission would make medical education as a whole, and also medical administration in general, more adaptive to contemporary conditions, more willing to make experiments, and more useful to the community.

It is not easy to view some of the current trends in medical education with complacency. With every revision of the curriculum, the student is always given more to do instead of less, and the general educational value of his training becomes of diminishing importance. The abolition of severe economic tests on the student entry would, I believe, favour education as opposed to professionalism, and be one factor in bringing medicine and medical education into closer relationship with contemporary needs.

I am, Sir, yours faithfully,

REGINALD T. PAYNE.

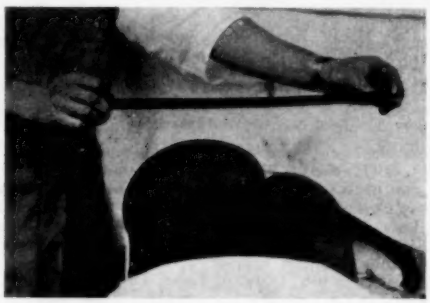
Harley-street, W., July 3rd.

GLUTEAL ANEURYSM

To the Editor of THE LANCET

SIR,—The article by Mr. Deitch and Dr. Rogan in your issue of June 26th leads me to send you this photograph and history.

The patient was an Ethiopian, about 40 years old, who came to the Swedish Mission Hospital, Harrar, during the recent war, complaining of enlargement of the left buttock. He had just been discharged from prison and his general condition was considerably better than the usual for men of his type, although he had been in prison for six years. The swelling was noticed first six years before he came to the hospital and had been increasing steadily in size. No history of trauma at any time. No pain, but great inconvenience due to the size and pulsation of the buttock. On examination, a healthy man of good physique, no sign of anæmia; the size of the left buttock can be judged by comparison with the right buttock in the picture, the



latter being normally developed; the whole left buttock was occupied by a pulsating tumour attached firmly to the pelvis, and giving a loud bruit on auscultation. The skin over the buttock was healthy and there was no wasting of the left leg. No history of syphilis. Diagnosis: gluteal aneurysm, apparently spontaneous.

First operation: ligation of internal iliac artery. Forty-eight hours afterwards the tumour was firm with no pulsation and no bruit. Second operation: attempt to obliterate the sac. This could not be done owing to the dense fibrous tissue and matting of the surrounding structures.

Three months later the buttock was smaller and without pulsation.

I am, Sir, yours faithfully,

KENNETH L. BUXTON.

Polzeath, Cornwall, July 5th.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED JUNE 26TH, 1937

Notifications.—The following cases of infectious disease were notified during the week: Small-pox, 0; scarlet fever, 1631; diphtheria, 958; enteric fever, 21; pneumonia (primary or influenzal), 495; puerperal fever, 34; puerperal pyrexia, 139; cerebro-spinal fever, 19; acute poliomyelitis, 8; encephalitis lethargica, 3; dysentery, 26; ophthalmia neonatorum, 96. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on July 2nd was 2994, which included: Scarlet fever, 746; diphtheria, 810; measles, 170; whooping-cough, 477; puerperal fever, 16 mothers (plus 11 babies); encephalitis lethargica, 284; poliomyelitis, 3. At St. Margaret's Hospital there were 29 babies (plus 11 mothers) with ophthalmia neonatorum.

Deaths.—In 124 great towns,* including London, there was no death from small-pox, 1 (0) from enteric fever, 14 (4) from measles, 2 (0) from scarlet fever, 10 (5) from whooping-cough, 27 (1) from diphtheria, 50 (12) from diarrhœa and enteritis under two years, and 14 (6) from influenza. The figures in parentheses are those for London itself.

Measles was fatal in two cases at Birmingham and at Nottingham. The deaths from diphtheria were scattered over 9 great towns, 3 at Manchester. Liverpool had 5 deaths from diarrhœa, West Ham and Birmingham each 4, Sunderland 3.

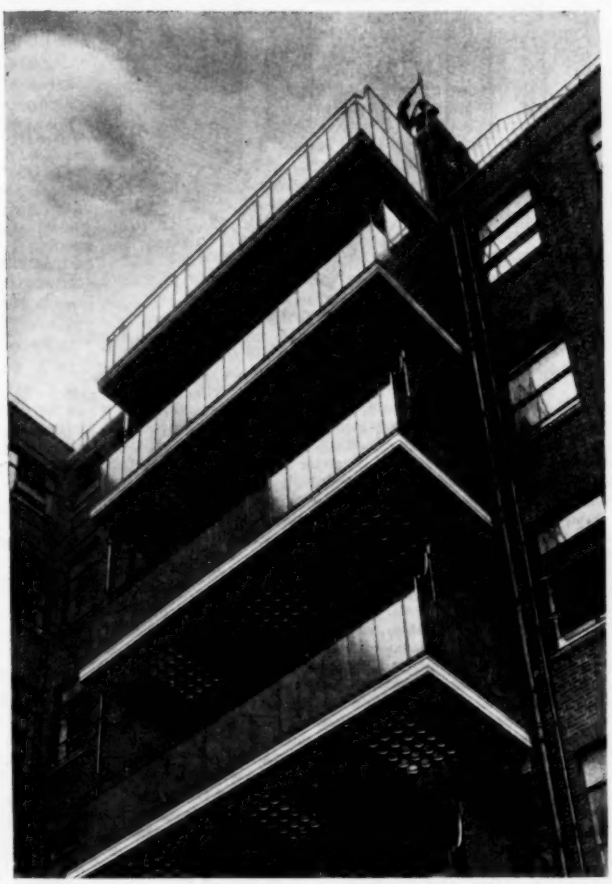
The number of stillbirths notified during the week was 296 (corresponding to a rate of 41 per 1000 total births), including 45 in London.

* Stanley U.D. (Yorkshire Riding) with a change of boundary bringing its population up to 52,067 has now become a "great town."

ST. BARTHOLOMEW'S HOSPITAL
KING GEORGE V BUILDING

IT is over ten years since it was decided that St. Bartholomew's Hospital with its 200-year-old wards and lean-to operation theatres would have to undergo, in Lord Stanmore's words, a "most drastic reconstruction," and plans were made to house both the medical and surgical units in one great modern block with widely deployed wings instead of in several isolated buildings. The surgical wards and operating theatres were finished in 1930, and on Thursday of this week the first great step in the rebuilding of the hospital has been completed with the opening of the King George V Building by Queen Mary. The new block is to contain the five general medical units with two wards each, communicating directly with corresponding units in the surgical block, the five operating theatres occupying a separate wing. This will leave the east block free for the special departments—the ear, nose, and throat, orthopædic, children's, septic, and additional gynæcological wards. The scheme originally prepared by Mr. T. A. Lodge, of Messrs. Lanchester and Lodge, the architects, has been modified in some respects. In order that the new building should harmonise with the rest of the early eighteenth-century square, part of the old block was to be retained, but this was impracticable and the front is now faced with Portland stone of a similar pattern. In order to keep the same sky-line when seen from the square, the fifth floor has been set back.

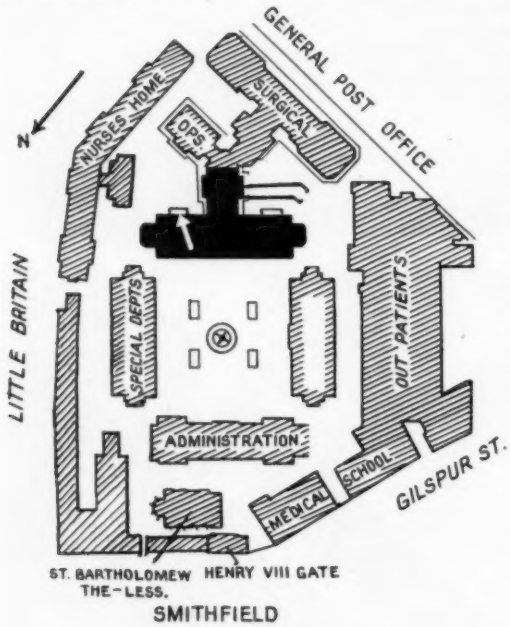
The site is that originally occupied by the old south block and since the new



By courtesy of the Architects' Journal.
The sun balconies (indicated by white arrow in the plan.)

building is considerably larger careful planning has been necessary to ensure the maximum of light and air to the various rooms.

On the lower ground floor are placed comfortable rest rooms for the use of the relatives and friends of patients, with a canteen and lavatory accommodation. There is also a kitchen unit for the preparation of special diets and a number of service and store rooms. On this floor also is a new electrocardiographic department to replace the cramped unit in the basement of the west block; the apparatus is connected by wires to the various wards throughout the hospital. From the ground to the fourth floors is devoted to the medical wards and the necessary rooms in connexion with these. Each floor is divided into two units, male and female, each of 25 beds housed in one large ward of 23 beds and two single-bed wards. The large ward has a glazed screen down the centre,



allowing four rows of beds. Adjoining the ward are the sanitary units, comprising two w.c.'s, a bathroom, and a clean and a dirty sink-room. These units are all tiled to a height of 7 ft. 9 in. in order to facilitate cleaning. The dirty sink-rooms are particularly interesting for the electrically operated bedpan washers and sterilisers, designed by Mr. E. W. Monkhouse, the consulting engineer; one has already been in operation for a considerable time and has proved entirely satisfactory; there are also special bedpan warming cupboards designed by the architects. Opening off the central corridor leading to the ward is the sister's room, a linen room, a patients' clothes room, and a ward kitchen, in which there is a large built-in refrigerator and a gas cooker and radiator, while there is ample cupboard space. Special telephones are installed for communication between the kitchen and the sister's room. Behind each ward is a roomy sun-bathing balcony, four of which are shown in Fig. 2. At the end of the corridor leading to the wards on each floor are examination rooms, staff rooms, nurses' lavatories, &c., common to the two units. On the fifth floor is a self-contained isolation department of two 2-bed wards and three single-bed wards and accessory rooms. Also at this level there are laboratories and a common room, forming an extension of the Dunn Laboratories on the corresponding floor of the surgical block. Above this there is a solarium and a flat roof to be used for beds, part of which has a sun awning, formed of roller blinds for ease in operation.

Oxygen has been laid on from a central supply room on the lower ground floor to all single-bed wards from the ground to fourth floors as well as to two points in each large ward; these are placed so as to make the supply available to four beds. Points are also provided in two wards in the isolation department. Similarly, suction apparatus is connected up to serve two beds in each large ward and all single-bed wards. In the entrance vestibule on the lower ground floor there is a staff indicator board; this is electrically operated and interconnected with similar boards in different parts of the hospital so that switches at any board operate the lights on all boards. Fire alarm indicators for the surgical, operation theatre, and medical blocks are also placed at this entrance. Each large ward has an electrically operated staff call-board for night superintendent and the resident staff. The ward units have their own hospital and exchange telephones in a small cubicle at one end of the main wards, and there is a wireless plug for every patient. Bed and food-trolley lifts have been placed centrally, and separate service lifts have been provided in the sanitary units for soiled linen, &c. The floors of all wards are made of teak blocks; terrazzo has been used for the sanitary rooms and kitchens, and rubber for all corridors and staircases in order to obviate noise as far as possible. The walls are painted in a high-gloss cream enamel and the ceilings in distemper. All doors are flush both sides and cupboards throughout have been built in.

Although restricted by the space available, the arrangements and equipment of the new building conform to the standards of the most enlightened hospital practice.

PUBLIC HEALTH

Milk in the Summer Holidays

AFTER studying the methods used by various local education authorities in the distribution of holiday milk to school-children, the special services sub-committee of the education committee of the L.C.C. have recommended a scheme for the distribution of milk to certain of the children under their care during the coming summer holidays. At many schools cleaning, painting, and so on are carried out during the holidays, and at others, where no work is being done, opening the schools would entail the employment of relief schoolkeepers; this has suggested the advisability of distributing the milk in the public parks instead of in school buildings. The scheme proposes that the women attendants at the gymnasia in the parks, who are familiar with the local children, should supervise the issue of the milk and undertake the necessary arrangements with the suppliers, relief attendants being provided where necessary. It has been thought advisable to limit the scheme in the first instance to those children who receive milk on the advice of the school doctors, as the inclusion of "voluntary" cases, though obviously desirable, would tend to complicate the experiment, and the arrangements suggested would probably not be found adequate for the distribution of milk to them. The cost of the experiment is doubtful, as the attendance of the children will depend upon such unpredictable factors as the weather and the numbers away on holiday, but suppliers will be asked to deliver the milk on a sale or return arrangement and, beyond the actual cost of the milk used, the only expense will be that of attendance.

PARLIAMENTARY INTELLIGENCE

ERADICATION OF ANIMAL DISEASES

ON June 29th the House of Commons went into Committee and Mr. W. S. MORRISON, Minister of Agriculture, moved the financial resolution in connexion with the Bill which will embody the Government's new agricultural proposals. The object of these was to increase the fertility of the soil, which would, first, put the land into such a condition that in an emergency it would be able to provide food for our own people; and secondly, it would do this in a manner advantageous to the normal development and practice of agriculture in time of peace. The proposals included the inauguration of an attack on disease in flocks and herds of animals and in poultry on a scale greater than had ever before been attempted in this county. The machinery of the Diseases of Animals Acts would be used, controlling both the ports and also the movement of animals in and from certain areas designated as infected. In this way the system had been successful in certain highly infectious diseases, but he regretted to say that the position with regard to other more insidious infectious diseases—notably, tuberculosis, had tended to deteriorate; this was due partly to the increased mobility of modern life. The Gowland Hopkins Committee in 1934 had estimated that 58 per cent. of the dairy cattle leaving herds were disposed of on account of disease; that the average productive life of dairy cattle was under four and a half years, or half what it should be; that 40 per cent. of the cows were infected with tuberculosis in various degrees and that about the same proportion were affected with contagious abortion. The total burden of the diseases among all kinds of livestock had been estimated at about £14,000,000 a year.

It was thus clear that the eradication of disease, even if they were only half successful, would be a most valuable service to agriculture. It was now proposed to tackle the immense problem of tuberculosis in cattle as what it was, a problem of the diseases of animals, by the appropriate machinery, with a single island service of veterinary officers for the purpose. Farmers themselves could not possibly solve it, for it was the result of many generations of neglect. The present system, under the local authorities, was at fault, largely owing to their varying resources and standards. Good work that had been done in one county might be hampered by lower standards in an adjoining county. The bacillus ignored county boundaries, and the division of areas by counties was not the same thing as the designation of areas according to the amount of disease in them. What the Government proposed was something bigger in scope than local authorities had ever tried to do before. In other words, the attack on tuberculosis had hitherto been carried out in detachments, with a local force sometimes getting out of touch with its neighbour and liable therefore to frustration. What was required was not so much a change in tactics as a more comprehensive strategy. The powers of local authorities were thus at present inadequate. To deal with milk they had to deal with cows, and that was a problem of the diseases of animals, because healthy cattle were the logical foundation of pure, clean milk. The proposals in the White Paper would set on foot the more comprehensive strategy by creating a centralised veterinary service for the whole island to combat the diseases of animals and of poultry in all their manifestations. The veterinary profession realised that the series of Diseases of Animals Acts provided the one way in which there was hope of real progress. Part-time practising veterinary surgeons would not in any way have their living interfered with, indeed, by making the agricultural community more conscious of the importance of disease among livestock there was a greater prospect of these practitioners finding their services used. He hoped to see from this a rise in the whole status of the veterinary profession.

CRITICISM OF THE MINISTRY

Mr. T. WILLIAMS said that the Labour Party were wholeheartedly with the Minister about the eradication of diseases, but it was a step which ought to have been taken some 30 years ago. The Gowland Hopkins Report revealed an appalling state of affairs. For example, there were approximately 50 counties which had not one full-time veterinary surgeon. As most of the counties were dominated by farmers they were wholly responsible for this. If the first step that the Minister was taking would lead to the cleaning up of the herds of this country, the saving to agriculture and to the health of the people, including the consumers of milk, would be enormous. The Labour Party wanted to see as soon as possible a national veterinary service with full power to act, so that no county which ignored its responsibilities would affect adjoining counties. Unless spending power was provided, however, he did not see what was to happen, when the land of this country was at length producing up to its absolute capacity. The Minister had given only one indication; he was prepared to subsidise cattle foods, but he was not prepared to subsidise the consumption of human food.

Mr. W. ROBERTS said they all welcomed the proposals for disease control. He hoped that the new attested herd regulations would be more effective than the old ones, and he wondered whether, under the new proposal, it would be possible to do something to encourage those breeding farmers who did not in fact sell milk. Under the attested herd scheme the main encouragement was the 1*d*. per gallon which the farmer might get on his milk, but there were many farmers in the high-lying districts who concentrated on breeding stock, and some incentive should be given to them to clear their herds of tuberculosis.

Sir MALCOLM BARCLAY-HARVEY said that it had been hotly contested in Scotland as to whether it should be under central control in London or whether there should not be some control in Edinburgh. He was much impressed by the arguments in favour of central control, and he thought that the Minister had done the right thing, but he pleaded that there should be a strong liaison in Edinburgh.

Mr. PRICE said he was glad that the Government proposed to deal with bovine tuberculosis on the basis of areas. He had been very much struck by the progress that the United States of America had made, for by that method they had in several cases completely cleared a whole state of any sign of bovine tuberculosis. He was glad that the veterinary services were to be brought under a more central control, but at the same time there was an invaluable private veterinary service in this country which was of tremendous assistance to farmers and which he hoped would not be jeopardised in any way by anything that was done under this scheme.

Sir R. DORMAN-SMITH said he believed that the Minister was going to make it easier for milk producers to qualify to come into the scheme for attested herds. If that be true it would probably mean that the Milk Marketing Board would have to face a formidable liability in the payment of premiums and bonuses to those who qualified. This was rather unfair, for it was certainly a thing the Government would never allow themselves to take on. The proposals in regard to diseases of animals would be a grand crusade to which they could all give the most hearty support. He assured the Minister that he could rely on the coöperation of the farming industry.

Mr. HOPKIN said he knew that it was not possible now to provide attested milk for the school scheme, because there was not enough; but surely it ought to be the first claim on the Minister as soon as possible to see that milk of the best quality and the highest purity was obtained by the school children before anyone else. He was glad to see that this scheme was joined up with a planned attack on contagious

abortion. The only criticism there that he had to make was that the amount of money to be spent was far too little, because £50,000 spread over four years was, in his opinion, hardly enough.

Sir F. ACLAND said he was acquainted with members of the medical profession who could, with the present standard of knowledge, prepare a dead vaccine that could be inoculated to calves at birth and would protect them from any risk of tuberculosis. If that system could be worked out and made generally applicable they could get rid of tuberculosis within one generation of cattle. They would see how that went. A friend of his in the medical profession was to have the chance of trying out his discoveries in the case of foot-and-mouth disease, and no doubt, if he could establish his theories, he would begin to apply them to tuberculosis as well.

Mr. HENDERSON STEWART moved an amendment which he said was designed to retain for Scotland the general autonomy in administration which under the Scottish Office they now enjoyed, and to preserve the present high standard of veterinary services in Scotland. The scheme outlined in the resolution, he said, struck at the whole basis of separate administration in Scotland. It would be impossible to bring the standard of the veterinary services in England up to that of Scotland within a reasonable measure of years, for the reason that there were not the veterinary surgeons available to provide the whole country with the same intensive inspection that was enjoyed north of the Border. The only effect of that would be to draw away some of the services of the veterinary staff that Scotland now possessed, and therefore to lower their present standards. That would not be for the good of the country.

THE UNDER-SECRETARY'S REPLY

Mr. WEDDERBURN agreed that for twelve years they had had a very efficient service in Scotland for the eradication of tuberculosis, which had resulted in there being more attested herds and a smaller proportion of tubercular-affected cows in non-attested herds in Scotland than in England. But there was not, he thought, the slightest reason why the efficiency of that service should be in any way affected by this centralisation. On the contrary, he thought that backward areas were more likely to be brought up to the standard of the more progressive authorities in Scotland than they would otherwise be. The Minister was very much alive to the administrative advantages of securing the closest possible connexion between the Scottish veterinary service and Scottish opinion, and in order to secure this, he was prepared to consider the appointment of a separate permanent officer in Edinburgh to keep in touch with the Scottish officers. If Mr. Stewart's amendment were carried it would involve a separate service for all animal diseases in Edinburgh. There were serious objections to that course. It would take a long time to train the necessary staff; and they would not have enough veterinary surgeons of their own in Scotland to deal with a serious outbreak of foot-and-mouth disease.—Mr. STEWART said that in view of the assurances Mr. Wedderburn had given he would ask leave to withdraw his amendment. The Labour Party, however, refused leave for withdrawal and the amendment was negatived by 210 to 111.

The resolution was then agreed to.

PHYSICAL TRAINING AND NATIONAL HEALTH

In the House of Lords on June 28th, Earl STANHOPE president of the Board of Education, moved the second reading of the Physical Training and Recreation Bill. He said that the demand for increased opportunities for physical training and fitness, particularly among the younger generation, was one of the most striking features of the present day. It was a result of national education, and whereas in the old days only some two hours a week were given for exercises and gymnastics, at present it was not uncommon for a period to be provided every day. This was more true in the elementary schools than in the secondary schools, and only in those that had been reorganised. Owing to a wider and more varied syllabus of physical training, to include an adequate daily period of exercise, organised games, swimming instruction, and gymnastics, children had left school with a desire for physical exercise, that had spread among the younger generation and had now infected a great many of their elders. When the House debated the question of national physique last November Lord Dawson of Penn had remarked that they should distinguish between physical education and physical recreation. Lord Stanhope said he wanted both. The physical education in schools should be compulsory, but given in such a way that it would become a hobby and a physical recreation in later years. What youth had gained in school, however, they often lost once they left, because there were no facilities for them to carry out physical exercises. It was to meet that need that the Government had produced this Bill.

It was essential that the scheme should be entirely voluntary because an Englishman was fairly easy to lead, but impossible to drive. It was based on existing organisations, and its object was to mobilise voluntary effort and to join it with the extremely valuable work already being done by local authorities. It had been said in various quarters that because this scheme coincided with the Government rearmament scheme they were therefore linked together, and that this was a method of obtaining recruits for the services. This was untrue and the scheme was in no sense military.

In this country it was very difficult to provide enough open spaces for games and for those who worked in cities to find time to get away except at the week-ends. A good deal of their physical training had therefore to be done in gymnasia; particularly during the winter months. A national system that confined itself solely to gymnastic training and physical jerks would be extremely dull, and they would never make a real success of it. By joining it up with outdoor sports and outdoor games, which by themselves did not make a man absolutely as fit as possible, they could make it an attractive hobby and recreation for people. The knowledge of the value of physical training and physical culture was growing very rapidly throughout the country, but even now that knowledge was nothing like so widespread as it should be. There was still a very large number, including those who were responsible for the better known public schools, who had not yet realised the value of physical training. Under the Bill the Board of Education was empowered to provide one or more national colleges, and to maintain and aid them as it thought fit. The object of the college was to train and equip an adequate supply of teachers, to carry on research work, to arrange demonstrations, and also, if necessary, to help in training instructors for school work.

Lord STRABOLGI, welcoming the Bill, said there ought to be a separate Ministry for the whole range of sport and physical culture. As long as a large section of the people were suffering from malnutrition, however, all their energies would be wasted. Wholesome and sufficient food was more important for a large section of poor people to-day than physical jerks. The Labour Party recognised the importance of physical fitness in national defence; part of that national defence must be a strong, virile population. If they wanted an army they might as well see that the recruits were strong and healthy, and he suggested that it might be worth while subsidising holiday camps.

Viscount BLEDISLOE said that he had been shocked at the relative neglect of national physique in this country, and he welcomed the Bill as president of the National Council of Social Service because it definitely combined Government action with voluntary organisation.

Lord ABERDARE said he agreed with the whole structure of the Bill, and believed that its results would be bigger than anyone anticipated who was instrumental in its original introduction to their democratic life. It had been stated that some people might find difficulty in taking exercise owing to working hours, but even those who engaged in heavy manual work were made more brisk and refreshed by physical exercise, and there was no doubt that a boy or man who took regular exercise of a scientific type could do manual work with less weariness; it was the difference between being in training and out of training. Surprise was expressed that the B.B.C. did not provide early morning broadcasts. Certain technical difficulties were standing in the way, but he hoped that they would be making an announcement shortly. The National College was a vital necessity, not only for training purposes, but for carrying out the very necessary medical research; perhaps it was the mainspring of the whole movement.

THE QUESTION OF NUTRITION

Viscount DAWSON OF PENN said he agreed with Lord Aberdare that this Bill was of vast importance, because it gave method and structure to a policy which would aim at the promotion of the fitness of the nation. It was necessary not only in the interest of the present but of future generations, that they should be given the best opportunity to turn those great potentialities that were particularly notable in the British race into actualities. They had only to go back to the time of the War to visualise what powers were in our blood. At Aldershot, at the beginning of the War, there were sent down a number of lads who, one would have thought at the time, could never be converted into anything approaching a soldier. At the end of six weeks they already showed an alteration, and in six months they were unrecognisable. He believed that if the youth of the nation had the opportunity of a training in fitness they would create a surprise by the rapid way in which they would respond.

They had to remember that in securing a fit race in days gone by nature did a large part of the work. She killed off the unfit, and only the fit survived. But they were gradually undoing nature's efforts by their developed sense of greater humanity and a more acute conscience towards those in distress. But if they were to continue that policy of looking after the weaker brethren—and he could not conceive anybody doubting that it was a right policy—they must remember that they were at the same time undoing nature's plan for discarding the weaklings of the race. It therefore became doubly important to set up a policy which would create fitness. If they created fitness and gave the proper opportunities it was inevitable that the more fit and efficient would come to the fore. Consequently the more fit and efficient would lead the nation, and the fit boys would ultimately marry the fit girls, and the eugenic standard of the race would be raised. It must be borne in mind that the young were all hero worshippers and they would follow the leaders of their own generation. If therefore they gave opportunity to those who were most fit to move forward, as they inevitably would, in the company of their generation, they would set the pace of conduct and the standard of fitness for those who would come after them.

Lord Dawson said he agreed with Lord Aberdare that the National College from one point of view was the pivot of this scheme. If there was a suitable college—and he hoped it would be within reach of London—and if that college was erected in suitable and large enough grounds, they would be able to have a community of students where they would learn the technique of their business, where men and women who were going to take up physical education as a whole-time job would be trained, and, in addition to those, where organisers and leaders for the voluntary organisations could receive a training of lesser duration and less strenuousness. And he hoped there would be one more class regarded, that they would be able to choose the best of the boys who were passing into adolescence and give them at this college a special six months' training. Thus they might test out those who they thought were potentially fit, and be able to give those who turned out to be fit the opportunity of becoming the leaders of their generation in the walks of life which they individually pursued.

The distribution in this country of what was called malnutrition—of what was, he thought, very often more accurately called undernutrition—was patchy, and it was not wholly due to poverty. Lack of education in the choice and the cooking of food was largely to blame. He believed that people were ready to receive this instruction, because they were beginning to understand that these were no small matters in securing the proper nourishment of the younger people. He had nothing but praise for this Bill, for it gave an opportunity for opening up a new era. By the means that it provided there was a prospect of giving this race the opportunities which it needed to bring itself to the forefront in physical fitness and happiness.

LORD STANHOPE'S REPLY

Earl STANHOPE said he found himself in entire agreement with everything Lord Dawson had said. Many people were inclined to quote the very high physical development in Germany, and yet the younger Germans were those born either during or just after the War, when the question of nutrition in Germany was, of course, one of great difficulty and when practically no children, whatever their class or whatever their wealth, had much chance of getting adequate food. Similarly in regard to Czechoslovakia. Those who knew something of the conditions in Czechoslovakia would say that anything of that kind was quite out of the question here; even among the unemployed the standard of life of the people here was so much higher than there. In Czechoslovakia, also, the improvement in physique of all classes, and particularly the working class, had been very remarkable. It had been due not to better nutrition so much as to physical training and physical development given by the sort of voluntary methods proposed under the present Bill.

The Bill was read a second time.

NOTES ON CURRENT TOPICS

What is Professional Income?

In the House of Commons on June 30th when a new clause in the Finance Bill providing for the charge of the National Defence Contribution was under discussion, Mr. PETHICK-LAWRENCE said that they had been told that professional men would be exempt from the operation of this tax. The Chancellor of the Exchequer had spoken of doctors and other professional men and it was understood that a doctor who earned fairly large professional fees exceeding £2000 a year was to be exempt. But when he (Mr. Pethick-Lawrence) read subsection 3 of the clause he was a little mystified. The subsection said:

> "The carrying on of a profession by an individual or by individuals in partnership shall not be deemed to be the carrying on of a trade or business to which this section applies if the profits of the profession are dependent wholly or mainly on his or their personal qualifications."

There were two sources of ambiguity in that sentence. One was in the words "wholly or mainly" and the other in the words "personal qualifications."

Colonel COLVILLE, Financial Secretary to the Treasury, said that in practice it was believed that there would not be much difficulty in determining whether the tax should properly be charged or not. The experience in income tax was that it was not impossible to determine what was a profession and what was not a profession and cases had been decided in the Courts. They wished to except from the tax those cases where a business literally could not be

carried on in the absence of the leader on whose personal qualifications the whole thing depended—the professional man who was, in fact, the centre and mainspring of the work of the firm.

Sir J. SIMON said he thought that the courts had said that the idea of a profession was that a man had been prepared to do his work by a course of systematic study. A doctor was called a professional man because he had gone through a medical course. There was good sense in that, because it meant that the capital that he was employing was in a special sense the capital inside his head. He had accumulated a lot of special knowledge as a doctor and that was the contrast between the idea of a profession and the idea of a commercial pursuit. On the whole this method had been found to work perfectly well before and he thought they could rely on it in the future.

Government and Supply of Cheap Milk

The House of Commons on July 5th agreed to the financial resolution on which the Bill amending the Milk Acts, 1934 and 1936, will be based.

Mr. RAMSBOTHAM, in moving the resolution, said that it regularised the payments of the English Milk Marketing Board to producer-retailers who had taken part in experimental schemes for the supply of cheap milk for nursing and expectant mothers, and children under school age in certain parts of the special areas. Doubt had arisen whether it was within the legal power of the Board to make these necessary rebates to the producer-retailers, and the resolution would put that beyond all doubt.

Mr. JOHNSTON said that the Government were subsidising milk in schools and school-children were being supplied with milk at 1*s.* a gallon. Everybody applauded that, and every medical officer of health, educationist, and nutritionist said that the Government were on the right lines. In the case of children of four, three, and two years old, the babies, the sick and the nursing mothers, the price was 2*s.* a gallon. Why should the Government continue to make this difference in the charges? Instead of allowing milk to be diverted to the factories, the Government should say to every medical officer of health that as long as a mother with young children cared to go or to send to any authorised distributor of milk she could get it at the same price as that at which it was supplied to the schools.

Mrs. TATE said she had constant complaints from mothers of children at schools that one of the reasons why they did not care for the milk was that it was pasteurised. It was time that there was a real, impartial inquiry into the relative nutritive value of pasteurised and unpasteurised milk. The milk-in-schools scheme had been in operation for three or four years, and there should be leaving school a generation of children who had acquired a taste for pasteurised milk. If inquiry were made, however, she thought it would be found that very few children who had left school had continued the milk habit.

Mr. W. S. MORRISON, Minister of Agriculture, replying to the debate, said questions had been raised about the pasteurisation of milk, and other matters which were of great interest to him in attempting to formulate a Government milk policy. All he asked the Committee to do that night was to agree to extend the existing provisions for another 12 months, so that he might get some other opportunity of laying before Parliament legislative proposals of a more permanent character.

Hairdressers' Registration Bill

In the House of Lords on July 2nd Lord STRABOLGI presented the Hairdressers' Registration Bill, which was read the first time. The Bill provides for the registration of hairdressers and regulates the practice of hairdressing. It establishes a Board, to be called the British Hairdressing Board, whose duty it shall be within a year after the passage of the Act to set up and maintain a register of hairdressers. The Board is empowered to make regulations for prescribing the standard of hygiene and sanitation to be observed in hairdressing establishments, and in schools, colleges, and centres of training approved by the Board. It is provided in Clause 21 that nothing in the Bill shall prevent the exercise of any right or function by a registered medical practitioner, or a registered chemist which he is entitled to exercise under any other Act, and that any registered chemist shall be entitled, without registration under the Bill, to perform any of the treatments included in the definition of "hairdressing." This definition is as follows: "The expression hairdressing means the performance of any or all of the undermentioned operations to any person for the cleanliness, comfort, or better appearance thereof—namely, shaving, brushing, combing, cutting, singeing, shampooing, tinting, dyeing, bleaching, waving, curling, setting, dressing, perfuming, or depilation of the hair upon the scalp or face; the hand or vibro massage of the scalp, face, hands, or arms; manicure; and the application of cosmetics, antiseptics, hair lotions, or tonics, powders, creams, or similar preparations."

Medical Benefit for the Adolescent

The National Health Insurance (Juvenile Contributors and Young Persons) Bill, which was introduced in the House of Commons on June 22nd, provides that any boy or girl, who, after reaching school-leaving age but before the age of sixteen, becomes employed within the meaning of the National Health Insurance Act shall immediately become entitled as a "juvenile contributor" to medical benefit as though he were an insured person, and that whether or not he remains continuously employed he shall continue to be so entitled until the end of the half-year in which he attains the age of sixteen and a half or until he becomes entitled to medical benefit as a fully insured person by reason of employment after the age of sixteen, whichever first occurs. The contributions to be paid are fourpence a week, divided equally between the juvenile contributor and the employer. The cost of medical benefit and of administration will be defrayed in the same manner as benefit under the principal Act, that is, as to six-sevenths (boys) and four-fifths (girls) out of the contributions, and as to the balance out of moneys provided by Parliament. The charge for medical benefit, including the supply of medicines and administration by insurance committees, will be on the same basis as for ordinary insured persons—namely, a sum not exceeding thirteen shillings per head per annum.

The period of juvenile membership of an approved society shall be counted towards the qualifying period for additional benefits of the nature of treatment, such as dental and ophthalmic benefits, when the juvenile contributor becomes an ordinary insured person. The contributions of those juvenile contributors who do not join a society within a time to be prescribed will be paid into a fund to be known as the Juvenile Deposit Contributors' Fund, and the cost of their medical benefit and its administration will be paid out of that fund, the solvency of which is guaranteed by the Reserve Suspense Fund of the main scheme.

Clause 5 of the Bill provides that it shall be the duty of education authorities to make arrangements for their officers to furnish on the application of a medical practitioner, or of an insurance committee on his behalf, for his confidential information, such particulars as to the school medical record of any young person (under the age of 18) and such other information in their possession relating to his medical history as the practitioner may deem necessary for the purposes of his functions in relation to the provision of medical benefit for that person.

On June 29th the Cinematograph Films (Animals) Bill was read the third time in the House of Commons and sent on to the House of Lords.

In the House of Lords on July 6th the Cinematograph Films (Animals) Bill was read a second time. The Royal Assent was given by Commission to the Hydrogen Cyanide (Fumigation) Act.

On June 30th in the House of Lords the Widows', Orphans' and Old Age Contributory Pensions (Voluntary Contributors) Bill was read the third time and passed.

On July 1st the Royal Assent was given to a number of Acts, including the Children and Young Persons (Scotland) Act; the Widows', Orphans' and Old Age Contributory Pensions (Voluntary Contributors) Act; and the Public Health (Drainage of Trade Premises) Act.

On July 2nd the Local Government Superannuation Bill was read the third time in the House of Commons.

In the House of Commons on July 5th the Agricultural Bill was read a second time. The Hydrogen Cyanide (Fumigation) Bill was read the third time.

QUESTION TIME

WEDNESDAY, JUNE 30TH

Day Nurseries in Liverpool

Mr. KIRBY asked the Minister of Health whether the Liverpool port, sanitary, and hospitals committee had notified him of their intention to close two municipal day nurseries; whether he was aware that such action would be widely deplored and might lead to the mothers of the children having to relinquish necessary wage-earning employment in order to care for their children at home; and, to avoid causing these mothers to seek public assistance, would he take steps to fully investigate any contemplated reduction in day-nursery accommodation in Liverpool.—Mr. BERNAYS, Parliamentary Secretary to the Ministry of Health, replied: My right hon. friend has not received any such notification from the City Council. He will communicate with them and inform the hon. Member of the result.

THURSDAY, JULY 1ST

Inspection of Electrical Apparatus in Factories

Mr. KELLY asked the Home Secretary whether he was aware that at a recent inquest on a man who was killed whilst testing a switchboard it was revealed that there were only five electrical factory inspectors for the whole country; and whether it was proposed to augment this number.—Sir SAMUEL HOARE replied: No, Sir. There are nine electrical inspectors working under H.M. Senior Electrical Inspector of Factories, and the inspection of electrical apparatus in factories also forms part of the duties of the general staff of Factory Inspectors. The strength of the inspectorate will be reviewed in the light of the provisions of the Factories Bill as finally settled. The hon. Member will recollect that I specifically stated that we contemplate a substantial increase in the whole inspectorate.

Imported Cheese and Undulant Fever

Mr. LIDDALL asked the Minister of Health whether his department obtained official certification that the herds of goats from the milk of which imported gorgonzola cheese was made were free from disease; and whether imported cheeses from foreign sources were continuously tested at our ports of entry to prevent the sale here of cheese containing germs of undulant fever or Mediterranean fever or other diseases endemic among South European herds of goats.—Sir KINGSLEY WOOD replied: No, Sir. The matter has not however escaped attention and I am advised that on the evidence available, no special precautions appear to be necessary.—Mr. LEONARD: Does the germ survive the cheese?—Sir KINGSLEY WOOD: It may be of some comfort to the hon. gentleman to know that any germs there may be are destroyed during the maturing of the cheese.

Health Conditions in Offices

Mr. CREECH JONES asked the Minister of Health what instructions he had issued to local authorities in the matter of health conditions of office workers; and whether he had recommended any minimum standards of working conditions and any system of systematic inspection of offices.—Sir KINGSLEY WOOD replied: I am sending the hon. Member a copy of a circular which I have issued urging local authorities systematically to exercise their powers under the Public Health Act, 1936. In view of the procedure laid down by the Act, it would not be appropriate for me to make such a recommendation as is suggested in the second part of the question.—Mr. CREECH JONES: Will the Minister call for periodical reports from local authorities in view of the great anxiety shown in the debates in the House when the Offices Regulation Bill was being discussed?—Sir KINGSLEY WOOD: I will consider that.

FRIDAY, JULY 2ND

Physical Standard in British Army

Sir A. WILSON asked the Secretary of State for War what are the physical qualifications required of recruits for line regiments at present, as compared with those required in 1934 and in 1914, respectively; and whether the physical standard required is still, as stated in the report on the British Army for 1934, equivalent to, if not higher, than for a first-class insurance policy.—Mr. HORE-BELISHA replied: The physical standard as regards minimum height and chest measurement for the year in question are as follow:—

	1914	1934	1937
Chest (fully expanded)	33½ in.	33 in.	33 in.
Range of expansion	2 in.	2 in.	2 in.
Weight	112 lb.	112 lb.	112 lb.

The medical standard is still equivalent to if not higher than that for a first-class insurance policy.

MONDAY, JULY 5TH

Air Ambulances for Spain

Miss RATHBONE asked the President of the Board of Trade whether he was aware that General Aircraft, Limited, of Croydon, had been informed that export licences for the supply of Monospar air-ambulances to the Basque Government could not be allowed; and whether, in view of the terms of Article 18 of the Geneva Convention of 1929, he would now reconsider this decision.—Mr. R. S. HUDSON, Parliamentary Secretary, Overseas Trade Department, replied: I presume that the hon. Member refers to the replies given to certain inquiries, which were not supported by evidence that the aircraft in question were in fact destined for Red Cross use. Any application for an export licence for ambulance aircraft for Spain supported by an approved Red Cross organisation will certainly be sympathetically considered.

Miss RATHBONE asked if it was not the case that the Red Cross organisation was not working in Spain and if it would not suffice if the application came from some organisation that was working in Spain?—Mr. HUDSON said he had nothing to add to the answer. If it was an approved Red Cross organisation the matter would be sympathetically considered.—Miss RATHBONE: May I press the point that the Red Cross organisation has declined to work in Spain? Is it fair to deprive the Basque Government of ambulances when the Red Cross organisation has refused to work in Spain? Neither the International Red Cross nor the British Red Cross has a single ambulance in Spain.—Mr. WEDGWOOD BENN asked if the Minister would say what he meant by "approved Red Cross organisations" for this purpose?—Mr. HUDSON said that so far as he was aware none of the applications that had been received had been from organisations that would be classed as approved Red Cross organisations.—Mr. WEDGWOOD BENN asked if that meant that if the organisation which made the application was not approved by the Minister as a Red Cross organisation for this purpose he would then decline to supply ambulances to Spain?—No further reply was given.

Nursing-homes By-laws

Mr. ROSTRON DUCKWORTH asked the Minister of Health the number of local authorities which had introduced

by-laws, and the number which had omitted to do so, under the Nursing Home Registration Act, 1927; and whether complaints were still being received with regard to the existence of bogus nursing-homes.—Sir KINGSLEY WOOD replied: By-laws under the Nursing Homes Registration Act, 1927, have been made by 88 local supervising authorities in England and Wales and by 42 district councils to whom the necessary powers have been delegated. I regret that the information available is not sufficient to enable me to state the number of authorities who have not made by-laws. As regards the last part of the question, the few complaints received in my department are normally referred to the local authorities who are responsible for the registration and inspection of nursing-homes and to whom such complaints should properly be addressed.

TUESDAY, JULY 6TH

Veterinary Services in Scotland

Mr. MALCOLM MACMILLAN asked the Secretary of State for Scotland whether he would take into consideration the need for veterinary surgeons and technical advice in breeding and improving livestock in the Western Isles; whether he would take special measures in this connexion; and what those steps were likely to be.—Mr. ELLIOT replied: Technical advice in the breeding and improvement of livestock is provided, without charge, by the staffs of the agricultural colleges in Scotland and their free services will continue to be available for the purpose. As regards the treatment of sick animals, no proposals designed to increase the number of veterinary surgeons in private practice in the Western Islands are at present in contemplation.

Free Meals to Necessitous Children in Glasgow

Mr. DAVIDSON asked the Secretary of State for Scotland the number of school-children in the Kelvingrove division of Glasgow receiving free meals as necessitous cases.—Captain HOPE replied: My right hon. friend is informed by the Education Authority that the number is 347.

Supply of Milk to School-children in Carmarthen

Mr. JAMES GRIFFITHS asked the Parliamentary Secretary to the Board of Education, at how many schools in the county of Carmarthen provision was made for the supply of milk to children during school hours and how many schools made no such provision.—Mr. KENNETH LINDSAY replied: According to returns from the schools showing the position on 31st March, 1937, provision for the supply of liquid milk to school-children was made on that date in 172 public elementary school departments in the administrative county of Carmarthen. Of the remainder, one department provided dried milk only and 19 departments made no such provision. Liquid milk was provided in all the departments in the borough of Llanelly, and in 10 out of 12 departments in the borough of Carmarthen, where the remaining 2 departments provided dried milk.

Stone-dusting in Mines

Mr. EDWARD DUNN asked the Secretary for Mines whether he proposed to amend the regulations relating to stone-dusting in mines consequent upon the disturbing comments made on the present stone-dusting regulations in recent mining disasters; and, if so, when they might be expected.—Captain CROOKSHANK replied: Yes, Sir. Draft general regulations, in which are included important amendments relating to precautions against coal dust have been communicated to the principal representative bodies of the industry for their observations. This action is being, of course, taken as a matter of urgency without prejudice to any recommendations that the Royal Commission may make on this subject.

Health Conditions in Mercantile Marine

Mr. CREECH JONES asked the President of the Board of Trade what arrangements existed in his department for the study and prevention of unhealthy conditions of the mercantile marine; whether any medical officers in his department were charged with this special responsibility; and to what extent consultation with the Ministry of Health on these matters was a practice of the mercantile marine section of his office.—Mr. OLIVER STANLEY replied: There are three medical officers attached to the survey staff and close contact is maintained with the Ministry of Health, and the port sanitary authorities. Questions relating to the general health of the mercantile marine are dealt with by an inter-departmental committee of Board of Trade and Ministry of Health representatives. The plans of ships built in this country are examined and any necessary steps taken to ensure that the crew's accommodation conforms to the present standards of hygiene and comfort. Provisions as to the maintenance of the accommodation are included in the Instructions to Surveyors on this subject which have recently been revised and will shortly be issued. In addition Board of Trade Surveyors take every opportunity to inspect the crew's accommodation on ships in service.

Medical Treatment of *Deutschland* Casualties

Mr. MAGNAY asked the Secretary of State for War whether any charge would be raised against the German Government in connexion with the reception and medical treatment of casualties from the German battleship *Deutschland* in the military hospital, Gibraltar.—Mr. HORE-BELISHA replied: No charge will be raised against the German Government in respect of a humane service which would always be readily rendered in such circumstances. The cost will be borne on Army funds.—Lieut.-Commander FLETCHER asked whether, in similar circumstances, we should not be very surprised to receive such a mean and petty-minded request for payment.—No further answer was given.

THE REAL FLORENCE NIGHTINGALE

FEW people now living knew Florence Nightingale as other than an unapproachable figure living in strict retirement. Some still suppose that she was only a nice gentle nurse. Mrs. Rosalind Nash, broadcasting in the "I Knew a Man" series on Sunday last, said that others, following Mr. Lytton Strachey, take her to have been a bitter and ambitious tyrant, liable to fits of what he called demoniac frenzy. To arrive at the truth Mrs. Nash held it to be necessary only to consider the facts, best recorded in Sir Edward Cook's biography. As one read, it quickly became evident that no mere amiable nurse could have done what she did. But was she a demoniacal scold? It seems unlikely, for an ungovernable temper is almost the greatest of all disqualifications for coöperation in responsible work. Miss Nightingale spent her life in public work, but never held any office except during the two years of the Crimean War. She enlisted in her work, not only the best professional experts of her time, but civil servants and other officials, who were glad to be at her disposal, and to have her help on their subjects. There have been reigning queens and other women rulers, said Mrs. Nash, and there has been many a woman who has influenced public affairs through her relation with a man in power. But, except Florence Nightingale, there has never been a woman who could do, who could be made welcome to do, as a private person, something very like the work of a permanent head of a Health Ministry. She was in effect a great voluntary civil servant, and it is as this that she should be remembered.

NEW HOSPITAL AT ST. HELIER.—The Surrey county council is asking the Ministry of Health to sanction a loan of nearly £1,000,000 to build a new hospital at St. Helier. The council has approved the scheme at a cost, including furniture, of £990,873, the plans having been under consideration for a couple of years. Last month it was reported that the tenders have been increased by about £300,000 owing to the rise in price of materials.

MEDICAL NEWS

Royal College of Surgeons of England

Election to the Council.—On July 1st three Fellows were elected into the council to fill the vacancies caused by the retirement of Sir Holburt Waring, Mr. C. H. Fagge, and Mr. W. Sampson Handley. The result of the poll was as follows :—

	Votes.
WILLIAM SAMPSON HANDLEY (Middlesex)	665
CHARLES HERBERT FAGGE (Guy's)	605
CECIL PEMBREY GREY WAKELEY (King's Coll. Hosp.)	480
James Ernest Helme Roberts (St. Bart's.) ..	367
Vincent Zachary Cope (St. Mary's)	359
Lancelot Edward Barrington-Ward, Kt. (Gt. Ormond-street)	287
William Hugh Cowie Romanis (St. Thomas's) ..	248
Walter Goldie Howarth (St. Thomas's)	217

In all 1227 Fellows voted; in addition 13 votes were found to be invalid. Mr. Fagge, Mr. Handley, and Mr. Wakeley are all elected for the full period of eight years.

University of Cambridge

Dr. A. M. Barry has been appointed an Elmore research student from Oct. 1st.

University of Birmingham

At a congregation held on July 3rd the hon. degree of LL.D. was conferred on Sir Gilbert Barling. The following degrees and diplomas were also conferred :—

M.D.—H. P. Newsholme.

M.B., Ch.B.—Nosrat Ameli, J. W. Brown, Gardiner Mitchell, C. P. Nicholas, Frances B. Robinson, J. M. Small, and C. W. Taylor (with second-class honours); Isidore Ackerman, Enid I. M. Addenbrooke, T. E. D. Beavan, R. H. F. Brain, V. H. Cooper, Enid Cyriax, C. M. Fenn, E. R. S. Grice, J. B. W. Hayward, A. C. Houghton, Joanna M. Hughes, Joan J. Lockley, Moses Meir, W. H. Osborn, H. G. H. Richards, E. J. Richardson, R. L. Sadler, J. H. Sangster, O. E. Smith, F. H. Vollam, and M. A. G. Ward.

Diploma in Dental Surgery.—Bernard Hirschfield, F. M. Kay, N. D. Pailthorpe, Melissa Sprowson, and William Sylvanus-Jones.

University of Wales

At recent examinations the following candidates were successful :—

M.D.

L. M. Edwards and Dorothy M. James.

D.P.H.

Part I.—R. M. Dykes, W. J. M. Evans, D. T. Richards, B. A. Thomas, and D. A. O. Wilson.

National University of Ireland

At recent examinations held at University College, Cork, the following candidates were successful :—

FINAL EXAMINATION FOR M.B., B.CH., B.A.O.

J. N. Twohig and Jeremiah Burke (with first-class honours), J. F. J. Hickey, Michael Lentin, R. G. G. Barry and J. J. Martin (with second-class honours), John Galvin, Harry Gremson, J. P. Lane, Margaret M. Loughnan, J. J. McCarthy, D. F. Murphy, T. K. Murphy, P. L. O'Neill, and Thomas Sheahan.

D.P.H.

M. J. McCarthy and John O'Herlihy.

Queen's University, Belfast

At recent examinations the following candidates were successful :—

M.D.

George Chesney, R. S. Cromie, W. B. Davis (gold medal), D. J. C. Dawson, J. D. Hardy, W. D. Hughes, Moses Jeffers, W. M. Loughridge (with commendation), Alan Lynn (with commendation), J. K. M'Collum, T. A. C. M'Quiston, B. M. Maxwell, and J. B. Wilson, A. C. Glandinning, John Harper, J. W. S. Irwin, J. W. Millen, and M. G. Nelson (with second-class honours); C. T. B. Adams, Jean E. Allen, Hugh Arthur, A. S. Baker, Evelyn Bennett, David Black, D. J. Blumberg, I. A. J. Blyth, A. M. Boyd, Ruth C. M. Brown, William Calwell, S. H. Carson, Wilhelmina M. Craig, Q. J. Doran, Frederick Dornan, W. H. Fee, Julia M. Ferriss, R. C. Fraser, S. J. G. Gilmour, J. E. Glasgow, J. A. H. Henderson, N. C. Hughes, E. F. G. James, M. I. Kaplan, Harold Kennedy, T. A. King, Mary E. Loan, John Lightbody, F. D. Lord, J. A. Macaulay, Grace E. M'Clafferty, J. M. M'Closkey, James M'Murray, R. A. E. Magee, Annie W. Megaw, R. J. Mitchell, F. J. Murray, J. A. O'Connell, J. W. B. Paton, Eileen E. Perry, M. I. Robinson, T. L. Ross, Kathleen Shannon, J. S. S. Thompson, J. B. Upton, D. G. C. Whyte, E. L. Wilson, G. N. Wilson, K. S. Wilson, and W. R. Wright.

University of St. Andrews

On June 30th the honorary degree of LL.D. was conferred on Mr. W. O. Kermack, D.Sc., director of the chemistry section of the laboratory of the Royal College of Physicians, Edinburgh, and on Dr. Angus MacGillivray, assessor of the General Council on the University Court, and formerly reader in ophthalmology at the University.

University of Liverpool

At recent examinations the following candidates were successful :—

M.D.

R. T. Bowes, J. L. Brown, Hilda M. Davis, D. O. Hughes, and K. W. Stroude.

FINAL EXAMINATION FOR M.B., CH.B.

G. E. O. Williams (first-class honours); and R. R. Hughes (second-class honours).

Part III.—A. M. Abrahams, J. de Bastarrechea, S. Bender, D. Boyars, W. E. G. Bradford, A. Brooke Bateman, K. W. Cameron, Sheila Carmichael, L. H. Chandler, R. I. Cohen, K. A. Colenso, K. W. Evans, J. G. Fox, Constance M. Frazer, T. C. Gray, A. S. Hall, Elsie O. Hughes, H. Hughes, T. S. Jones, J. Kay, A. T. Leggate, M. Libman, G. B. Manning, R. Marcus, Doreen M. Martin, R. S. Riley, W. A. M. Robinson, J. P. G. Rogerson, P. J. Rooney, J. M. Russell, Henrietta Sloan, A. C. Smerdon, Gwenda Vaughan, J. Wajnerowicz, Evelyn M. Williams, Margaret E. Williams, and H. Zalin.

Part II.—H. G. A. Almond, H. Alstead, H. Angelman, C. T. Baynes, Patricia M. Bennett-Jones, A. L. Black, E. J. Bowmer, A. R. Bracey, D. W. Bracey, H. Braslavsky, B. H. Brindle, H. Buckley, A. E. Burton, B. Carruthers, J. L. Chisnall, W. H. R. Cook, J. W. Crowther, G. H. Daglish, H. Dakin, R. B. Davies, J. Donnelly, Mary W. Gaskell, K. B. Gibson, J. Griffith, E. L. Hamm, W. J. Hay, Anne F. M. Heaney, D. R. Holden, R. S. Holgate, E. P. Houghton, G. O. Hughes, D. A. Hunt, Brenda M. Jones, Iola L. T. Jones, M. P. Jones, P. Jones, Helen Kay, R. J. Keating, J. C. Kee, J. C. Kitchen, E. Leather, J. M. Marchant, J. Mills, J. Moroney, A. Nachmanovitz, S. Newman, J. H. Newmark, P. J. O'Flynn, E. N. Owen, R. A. C. Owen, J. L. Patton, B. I. Phillips, Hilda C. Podmore, J. G. Pritchard, W. Pritchard, E. B. Riding, D. J. Roberts, G. I. Roberts, R. H. Roberts, G. M. S. Ryan, E. L. Salingar, G. Sanderson, Joyce M. Scholefield, V. K. Summers, R. J. D. Temple, G. R. Thorpe, G. C. Tweedie, Lucy H. E. Walker, R. Watson, J. H. D. Wetherell, R. H. White-Jones, A. R. Whitman, A. H. Williams, C. J. Williams, Gwendoline Williams, I. P. Williams, Joan S. Wood, E. G. Wright, G. Wynne-Griffith, and M. Wynroe.

Part I.—C. D. Alergant, G. E. Badman, Frances E. Brierton, R. F. Browne, E. H. L. Cook, Margaret Edge, R. M. Evans, H. B. Forrest, D. M. I. Freeman, Thelma R. Gaunt, C. M. Gregory, G. C. Griffiths, J. Harders, F. Hedley, Bessie Howarth, H. Ingham, C. T. Jenkins, W. Kulke, A. L. Latner, P. C. Lawson, Pearl Lyons, D. H. McCormack, Sylvia Makin, Eileen E. V. Martin, R. J. Miller, G. W. H. Millington, J. D. Muir, P. J. O'Flynn, R. J. Parry, J. L. Patton, Geraldine M. H. Paul, Eleanor M. Pearson, L. G. Poole, A. G. Porterfield, T. Price, V. A. Rogers, C. Rowlands, H. J. Shuttleworth, C. R. Sluming, H. J. H. Soulby, W. O. Spence, Lucy M. Sutcliffe, Catherine S. Thomas, G. O. Thomas, Megan E. Thomas, Joan P. Thomson, G. R. Thorpe, J. N. Threlfall, Olivia S. Turner, J. A. Wethered, J. H. D. Wetherell, A. G. Williams, and K. M. Willis.

D.M.R.E.

Part B.—M. J. Brady, J. Courtney, T. D. J. O'Farrell, and J. A. Ross.

D.P.H.

E. Agius, R. T. Bowes, A. Dodd, Bessie Dodd, J. G. Hailwood, Joy C. Lowe, P. Somasundram, and E. A. Stilon.

Part I.—G. R. Griffith and S. M. Laird.

D.T.M.

J. Yofe.

D.T.H.

G. B. Ludlam, S. H. R. Syed, and Luise Wislicki.

Ophthalmic Medical Practitioners' Group

This group was constituted at a meeting held at 17, Russell-square, London, W.C.1, on July 3rd, at which Dr. H. C. Smith (Barnes) presided, and the objects of the group were defined as (1) to protect the status and interests of ophthalmic medical practitioners and ophthalmic surgeons, who are interested by capacity and experience in ophthalmology, especially in their relation to local and other authorities and prescribing and non-prescribing opticians; (2) to promote the advancement and interest of registered medical practitioners in the study and practice of ophthalmology. An executive council was elected consisting of Dr. T. B. Hewson (Hornsey), Dr. J. P. Higham (Commerdale, Yorks), Dr. W. J. Lindsey (London), Dr. N. Pines (London), Dr. W. H. Summerskill (London), Dr. A. L. Watts (Edgware), with Dr. H. C. Smith (chairman), and Dr. A. Hutton-Ashkenny (hon. sec. and treasurer). It was decided to hold meetings quarterly

in March, June, September, and December; to form provincial groups acting through the central group; to overcome the Minister of Health's contention that there is an insufficient number of specially qualified ophthalmic practitioners by advising and helping more practitioners to become so qualified; and to obtain the assistance of the British Medical Association in advising and inducing patients to select experienced ophthalmic medical practitioners in preference to prescribing opticians or shop-counters. Any who are interested may communicate with the hon. secretary of the group at 100, Greyhound-lane, S.W.16.

Medical Travelling Fellowships

The Medical Research Council announce that they have awarded Rockefeller fellowships for the academic year 1937–38 to the following candidates, all of whom propose to work at centres in the United States:—

Dermid Lockhart Cameron Bingham, M.B., F.R.C.S. Edin., clinical tutor, surgical out-patient department, Royal Infirmary, Edinburgh;

Eric George Lapthorne Bywaters, M.B. Lond., assistant clinical pathologist, Middlesex Hospital;

Philip Rainsford Evans, M.B., M.R.C.P. Lond., registrar, medical diseases of children, King's College Hospital;

John George Sclater, M.B., M.R.C.P. Edin., tutor in clinical medicine, Royal Infirmary, Edinburgh;

Eric Frank Scowen, M.D., M.R.C.P. Lond., assistant director, medical professorial unit, St. Bartholomew's Hospital;

Charles Herbert Stuart-Harris, M.D., M.R.C.P. Lond., Sir Henry Royce research fellow in influenza, London; and

Graham William Hayward, M.B., M.R.C.P. Lond., resident medical officer, National Hospital for Diseases of the Heart, London.

The Rockefeller Foundation have also awarded fellowships, on the recommendation of the Council, to the following candidates in the special field of psychiatry, neurology, and related subjects:—

Edward William Anderson, M.D., M.R.C.P. Lond., medical director, Cassel Hospital, Penshurst;

Alexander Kennedy, M.D., M.R.C.P. Lond., assistant medical officer, Maudsley Hospital, London;

Alan Sutcliffe Kerr, M.B. Liverp., F.R.C.S. Eng., surgical registrar, Royal Infirmary, Liverpool;

Denis John Williams, M.D. Manch., M.R.C.P. Lond., resident medical officer, Hospital for Nervous Diseases, Maida Vale; and

Alexander Francis Rawdon-Smith, Ph.D. Camb., senior student, Royal Commissioners for the Exhibition of 1851, working in the Psychological Laboratory, University of Cambridge.

Dr. Anderson proposes to work in Germany, the others at centres in the United States. Dr. Rawdon-Smith will hold his fellowship for six months only.

An All-India League of Health

Lord Horder presided at a luncheon given at Claridges Hotel on July 6th to meet Sir Firoz Khan Noon, the High Commissioner for India, and representatives of the councils of the People's League of Health to commend a project for establishing an All-India League of Health on lines analogous to the organisation in Great Britain.

Lord Horder said that the possibility of placing at the disposal of the people of India the knowledge gathered and coördinated by the People's League of Health was first mooted in 1925, when Major-General J. B. Smith, then medical adviser to the Secretary of State for India, expressed the view that such a body would be of much value to the Indian Empire. Although the League had the sympathy and encouragement of the Minister of Health and of other Government departments, it was a voluntary body. In a highly individualised society there was a mass of expert knowledge, resident in trained and responsible men and women, which needed mobilising in the interest of the community. To do this and to make this knowledge available for the people by the way of health education was the work of the League. It would be opportune at the present time to explore the possibilities of establishing in India a sister-body that might collaborate with the League in making her people health-conscious, and thereby the better able to fulfil the duties of citizenship that were now being entrusted to them. It was to ventilate this thought and to secure the valuable advice of those who knew India that the lunch had been arranged. Brief speeches were then made on different aspects of the work of the League by Dr. C. O. Hawthorne, its chairman of council; Dr. P. Manson-Bahr, who spoke on the triumphs of tropical medicine; Prof. J. C. Drummond and Miss Harriette Chick, D.Sc., who spoke on nutrition; Sir Frederick Hobday who explained the importance of the work done by the veterinary council of the League; and Prof. James Young, who described an investigation now taking place under the League's auspices on the nutrition of expectant and nursing mothers. The High Commissioner said that India had reached a stage where she was able to coöperate in matters of public health and medical research with scientists in this country for the benefit of her own people. He mentioned various achievements which had already taken place, notably the elimination of cholera from the Punjab. The great difficulty, however, was the poverty of the people. The urgency and importance of health problems was very much in the minds of the legislators; they were doing their utmost to solve them as far as finances allowed, and they would be indeed grateful for the offer of expert help that was now being made. He warmly thanked the People's League of Health for the interest it was taking. Its lead in this direction would be received with enthusiasm and gratitude in India.

Cambridge Medical Graduates Club

Presiding at a dinner of this club in the hall of King's College on July 2nd, Sir Walter Langdon-Brown was able to announce a record attendance of 94 members and guests. Like Samuel Gee riding through the snow to his wedding he had said to himself: Is it really worth while? And apparently he thought it was. Returning to Cambridge there were always changes to be found. To-day the new anatomy school could be seen rising from its foundations; it should be open by October, 1938. Under the regius professor, Dr. J. A. Ryle, the medical unit had completed its first year. Sir Joseph Barcroft had found a distinguished successor in Dr. E. D. Adrian in the chair of physiology, and from October next the university would have a professor of pathology who was also vice-chancellor—Dr. H. R. Dean. Among notable events of the past year had been the abolition of the M.B. thesis—an event that he feared would cause the ghost of Sir Clifford Allbutt to revolve in its tomb. In speaking of his own never-failing pleasure at seeing Cambridge again Sir Walter likened going to the University to falling in love: "nobody can ever have had such a remarkable experience before."

Dr. L. E. H. Whitby reviewed the domestic affairs of the club, attributing the success of the dinner to his fellow-secretary Mr. W. D. Doherty. The chairman's health was drunk, with song; but Sir Walter refused to emulate the clerical profession in addressing the same audience twice in the same day; and the company, being pleasantly fortified, proceeded to take the air on the King's lawn.

London Hospital Medical College

The annual prize-giving was held at this college on Tuesday last. Prof. William Wright was prevented by illness from attending to give his usual review of the year's activities, and Lieut.-Colonel W. Marlborough Pryor in expressing his regret that this should be so said that the London Hospital is deeply indebted to Prof. Wright for his work during the past 27 years. Though he was retiring from the office of dean, which was to be taken by Dr. A. E. Clark-Kennedy, he was retaining the chair of anatomy.

Sir Kingsley Wood, Minister of Health, who distributed the prizes, said he had always regarded the story of small beginnings and steadfast purpose as one of the fascinating of all the stories he knew. When seven men met together nearly two hundred years ago in the bar parlour of The Feathers tavern, Cheapside, to found this great hospital on a capital of a hundred guineas, they showed a vision and a courage that all must admire; but when, at a somewhat later date, in another tavern, the treasurer reported that there was no more than a shilling in the bank, and when they still carried on, they showed more than courage, they showed a continuity of purpose that was, perhaps, the greatest asset which any man or any institution could possess. Are you poor? Are you ill? Can we help you?—those were the guides of conduct to John Harrison, surgeon, aged 22, the leading spirit of the seven; all else—mere ways and means—could and did follow after. And Sir Kingsley thought the mind of a great follower of that tradition, the late Lord Knutsford,

must often have turned to that shilling and to the memory of John Harrison as a touchstone and an inspiration for the prodigious efforts that he made to keep London Hospital abreast of the advances of medical science, and the needs of the suffering poor. And about the year 1740 was one of those times of spiritual and intellectual stirrings of men's minds; John Wesley was revitalising religion, and not long before, the great Samuel Johnson, friend of David Garrick, had come to town, and Pope had written that "the proper study of mankind is man." And a hospital conscience seemed to have grown up in those days, which might have been due partly to a reborn sense of duty to the sick poor and partly to a wholesome fear of catastrophic visitations of disease, which were at that date all too common. He asked his hearers to think sometimes of that fine old man who founded the medical school of the London, Sir William Blizzard, who lived to the ripe age of 92, and to make themselves acquainted with the history of the struggles of those days. Sir Kingsley said it had been increasingly felt that the most important thing to treat was not merely the disease but the man. Those who were in general practice were in the front line of the fight for better health. All would agree that it was not enough to cure the stricken or to protect the community from disease; the need more and more was for health builders. Advice must be given not only on the postponement of death but on a way of life.

Canadian Public Health Association

Dr. George F. Buchan, medical officer of health for Willesden, was among those who were elected to the honorary life-membership of this association at its twenty-sixth annual meeting held lately at Toronto.

Plans for St. George's Hospital, London

Rebuilding is to begin at this hospital within a year and will have to be in three sections. A million pounds will be required of which almost a quarter has been collected. During the last ten years 60,000 patients have been admitted to the hospital and nearly half a million out-patients treated.

New Hospital at Iver

The Duke of Kent on July 2nd opened the new Iver, Denham, and Langley Cottage Hospital of which he is the patron. The site was given by Miss Ward and is opposite the old institution which was inadequate for its purpose.

Infants Hospital, Vincent-square

The age-limit for patients at this hospital has been raised from five years to twelve. Children from birth to twelve years of age are now therefore eligible for treatment.

St. Andrew's Hospital, Dollis Hill

The children's ward erected here at a cost of over £7000 in memory of the late Canon Carton de Wiart was opened and blessed by the Archbishop of Westminster on June 24th.

King Edward VII Sanatorium, Warwick

Sir Arthur MacNalty, chief medical officer of the Ministry of Health, opened the new clinic and ward block at this institution on June 28th.

International Society of Medical Hydrology

The next annual meeting of this society, which is open to non-members, is to be held in Frankfurt-am-Main and the neighbouring spas from Oct. 17th to 22nd. The members of the congress will be housed in Wiesbaden but the opening meeting and first discussion will be held at Frankfurt. Meetings will also be held at Bad Nauheim and Bad Ems and a visit will be made to Schwalbach and Schlangenbad, on the way to Eltville, where a Rhineland vintage festival will take place. After the meeting there will be optional excursions to Kissingen, Heidelberg, Würzburg, Worms, Baden-Baden, and other places. The subjects for discussion will be bio-climatology; psychological factors in health resort practice; and the natural history of peloids (peats and muds). There will also be demonstrations of laboratory and experimental work and communications. Further information may be had from the secretary of the society, 109, Kingsway, London, W.C.2.

Vacancies

For further information refer to the advertisement columns

Ayrshire Sanatorium, Glenafton, New Cumnock.—Med. Supt., £600.
Barking Corporation.—Res. M.O. for Upney Maternity Hosp., £350.
Bath, Royal United Hosp.—H.P., at rate of £250.
Birmingham City.—Asst. M.O. for Maternity and Child Welfare, £500.
Birmingham City Education Committee.—School M.O., £1100.
Birmingham, Dudley-road Hosp.—Asst. Pathologist, £650.
Bolton Royal Infirmary.—Two H.S.'s, each at rate of £150.
Bootle General Hosp.—H.P., two H.S.'s, and Cas. O., each at rate of £150.
Bradford New Royal Infirmary.—Res. M.O. and Asst. Pathologist, £225.
Bradford Royal Eye and Ear Hosp.—Two H.S.'s, each £180.
Brighton, Royal Alexandra Hosp. for Sick Children.—H.P., £120.
Brighton, Royal Sussex County Hosp.—Cas. H.S., £120.
Brighton, Sussex Maternity and Women's Hosp.—Res. H.S., £130.
Bristol City and County.—Asst. M.O.H., £500.
Buxton, Derbyshire, Devonshire Royal Hosp.—H.P., at rate of £150.
Cambridge, Addenbrooke's Hosp.—H.P. and H.S., each at rate of £130.
Cardiff, King Edward VII Welsh National Memorial Assoc.—Res. Asst. Tuber. M.O. for Sully Hosp., £500.
Carlisle, Cumberland Infirmary.—H.S., £155.
Chesterfield and North Derbyshire Royal Hosp.—H.S., at rate of £150. Also Final-year Student.
Croydon County Borough.—Asst. M.O. for Obstetrics, £300.
Doncaster Royal Infirmary.—H.S., £175.
Derby, Derbyshire Royal Infirmary.—Cas. O. and Orthopædic H.S., £150.
Dumfries, Crichton Royal.—H.P., £200.
Durham County and Sunderland Eye Infirmary.—H.S., £350.
Durham, Sherburn Hosp.—Res. Asst. M.O., £200.
Ealing, King Edward Memorial Hosp.—Cas. O. and Deputy Res. M.O., at rate of £225.
Eastbourne Royal Eye Hosp., Pevensey-road.—H.S., £100.
Evelina Hosp. for Sick Children, Southwark, S.E.—H.S., at rate of £120.
Exeter, Royal Devon and Exeter Hosp.—Hon. Consultant in Psychiatry.
Fulham Metropolitan Borough.—Res. M.O. and Asst. M.O. for Maternity and Child Welfare, £350.
Grimsby and District Hosp.—Sen. H.S. and H.P., at rate of £200 and £150 respectively.
Hampstead General and N.W. London Hosp., Haverstock Hill, N.W.—H.P., Cas. M.O., and Cas. Surg. O., each at rate of £100.
Herefordshire General Hosp.—H.P., £100.
Hertford County Hosp.—H.S., at rate of £180.
Hull Royal Infirmary.—H.S. to Ophth. and Ear, Nose, and Throat Dept., at rate of £150.
India, All-India Institute of Hygiene and Public Health, Calcutta. Director, Rs. 2500 per month.
Ipswich, East Suffolk and Ipswich Hosp.—Cas. O., at rate of £144.
Kettering and District General Hosp.—H.S. and H.P., at rate of £175 and £150 respectively.
Kidderminster and District General Hosp.—Jun. H.S., £100.
Kincardine County.—Deputy M.O.H., £600.
King's College Hosp., Denmark Hill, S.E.—Registrar to Children's Dept. and M.O. to Rheumatism Clinic.
Leeds Public Dispensary and Hosp.—Hon. Physician.
Leigh Infirmary, Lancashire.—Jun. H.S., at rate of £150.
Lincolnshire (Kesteven) County Council.—Asst. County M.O.H., £500.
Liverpool Royal Infirmary.—Medical Tutor and Registrar, £200.
Liverpool Sanatorium, Delamere Forest.—Jun. Asst. to Med. Supt., £225.
Liverpool Stanley Hosp.—H.S. and Gynæcological H.S., each at rate of £80.
London County Council.—Res. Med. Supt. for Eastern Hospital, £1100. Asst. M.O.'s (Grade I), each £350. Asst. M.O.'s (Grade II), each £250.
Manchester, Abergele Sanatorium.—Res. Asst. M.O., £350.
Manchester, Ancoats Hosp.—Cas. O., £250. H.S. to Ear, Nose, and Throat Dept. and H.P. to Hon. Phys., at rate of £100. Also Asst. Surg. Officer to Orthopædic Dept., 10*s.* 6*d.* per attendance.
Manchester Ear Hosp., Grosvenor-square, All Saints.—Res. H.S., £120.
Manchester, Prestwich Mental Hosp.—Locum Tenent M.O., 7 guineas per week.
Manchester, St. Mary's Hosps.—Asst. Res. Obstet. O. for Whitworth-street West Hosp., £100.
Market Drayton, Cheshire Joint Sanatorium.—Res. H.P., £250.
Metropolitan Hosp., Kingsland-road, E.—Cas. O. and Res. Anæsthetist, £100.
National Hosp. for Diseases of the Nervous System, Queen-square, W.C.—Asst. Physician. Also H.P., at rate of £100.
National Temperance Hosp., Hampstead-road, N.W.—Cas. O., at rate of £120.
Newcastle-upon-Tyne, Hosp. for Sick Children.—H.P. and H.S., each at rate of £100.
New Zealand, General Hosp., Auckland.—Deputy Med. Supt., £800.
North Shields, Preston Hosp.—Sen. Asst. M.O., £450.
Nottingham and Midland Eye Infirmary.—Res. H.S., £200.
Oldham Municipal Hosp.—Res. Surg. Officer, £500.
Oldham Royal Infirmary.—Two H.S.'s and Cas. O. and H.S. to Fracture Dept., each at rate of £175.

Plymouth, City General Hosp.—Deputy Med. Supt., £450.
Plymouth, Prince of Wales's Hosp., Greenbank-road.—H.S., at rate of £120.
Port of Spain City Council.—M.O.H., £800.
Portsmouth Royal Hosp.—Fourth H.S. and Cas. O., each at rate of £130.
Portsmouth, Saint Mary's Hosp.—Sen. Res. M.O., £350.
Preston, Sharoe Green Hosp.—Jun. Asst. Res. M.O., at rate of £100.
Reading, Battle Hosp.—Res. Asst. M.O., £300.
Rochdale Infirmary and Dispensary.—Sen. H.S., £250.
Rotherham Hosp.—H.S. for Ophth. and Ear, Nose, and Throat Depts., £150.
Royal Masonic Hosp., Ravenscourt Park, W.—Two Res. Surg. Officers, each at rate of £250.
Royal Waterloo Hosp. for Children, Waterloo-road, S.E.—Hon. Clin. Asst.
St. John's Hosp., Lewisham, S.E.—Cas. O., at rate of £100.
St. Paul's Hosp. for Urological and Skin Diseases, Endell-street, W.C.—H.S., at rate of £100.
Salisbury, General Infirmary.—Res. M.O., £250.
Sheffield Children's Hosp.—H.S., £100.
Sheffield Royal Infirmary.—H.S., Aural H.S., and H.S. to Orthopædic, &c., Service, each at rate of £80. Ophthal. H.S., at rate of £120, Cas. O., at rate of £150.
Southampton, Royal South Hants and Southampton Hosp.—Cas O. Also Res. Anæsthetist and H.S. to Ear, Nose, and Throat Dept., each at rate of £150.
South-Eastern Hosp. for Children, Sydenham, S.E.—Res. M.O., at rate of £100.
Southend-on-Sea General Hosp.—First H.S., at rate of £100.
Stoke-on-Trent, Longton Hosp.—H.S., £160.
University College Hosp. Medical School, Gower-street, W.C.—Asst. in Depts. of Bacteriology and of Morbid Anatomy, each £250.
Wakefield, Clayton Hosp.—H.S., £175.
Weir Hosp., Grove-road, Balham, S.W.—Jun. Res. M.O., £150.
Weston-super-Mare General Hosp.—Res. H.P., £150.
Wolverhampton, Royal Hosp.—Asst. Res. M.O. for Gyn. and Obstet. Dept., at rate of £100.
Worksop Victoria Hosp.—Sen. and Jun. Residents, at rate of £150 and £125 respectively.
Worthing Hosp.—H.S., at rate of £130.
Wrexham and East Denbighshire War Memorial Hosp.—Res. H.S., at rate of £150.

Medical Referee under the Workmen's Compensation Act, 1925, for the Wolverhampton County Court District (Circuit No. 25). Applications for appointment should be addressed to the Private Secretary, Home Office, Whitehall, London, S.W.1, before 27th July.

Appointments

BLACK, J. I. M., M.B. Durh., F.R.C.S. Eng., Registrar to the Throat and Ear Department of the Royal Victoria Infirmary, Newcastle-upon-Tyne.
BRADLEY, J. V., M.B. Camb., F.R.C.S. Edin., Hon. Assistant Surgeon to the Coventry and Warwickshire Hospital.
CAMERON, A. J., M.B., F.R.C.S. Edin., D.O.M.S., Second Ophthalmic Surgeon to the Sutton and Cheam Hospital.
CLIVE, F. T., M.B. Lond., Medical Superintendent at the National Sanatorium, Benenden.
GOLDHURST, S. V., M.A. Camb., M.R.C.S. Eng., Physician-in-Charge of the Physio-therapeutic Department of the Sutton and Cheam Hospital.
LUBNER, S. H., L.R.C.P. Lond., Assistant Medical Officer at the Cefn Coed Hospital, Swansea.
MCLEAN, GLADYS F. A., M.B. Manch., D.P.H., Assistant School Medical Officer for Preston.
POTTER, A. L., M.D. Liverp., M.C.O.G., Consultant Obstetrician to the Lancashire County Council, the County Borough of Blackburn, the Borough of Darwin, and the Blackburn and East Lancashire Royal Infirmary.
SUTTON, SIMON, M.B. Manch., Resident Surgical Officer at the Chesterfield and North Derbyshire Royal Hospital.
TALBOT, GRAEME, M.B. N.Z., F.R.C.S. Eng., Hon. Ophthalmic Surgeon to the Princess Louise Kensington Hospital for Children.
TRUEMAN, R. S., M.B. Lond., F.R.C.S. Edin., Resident Surgical Officer at the Bury Infirmary.

London County Council Hospital Staff.—The following appointments, promotions, and transfers are announced. A.M.O. (I) or (II) = Assistant Medical Officer, Grade I or II. Temp. = Temporary. Med. Sup. = Medical Superintendent.

CURTIS, F. R., M.B. Leeds, Assistant Pathologist, Whitechapel Clinic;
MORTON, WILLIAM, M.B. Glasg., A.M.O. (I), St. Clement's;
ARMSTRONG, J. R., M.B. Belf., A.M.O. (I), St. George-in-the-East;
CLARK, H. M., M.B. Edin., A.M.O. (I), St. Andrew's;
BAILEY, G. N., M.B. Camb., F.R.C.S. Eng., A.M.O. (I), St. James';
SUTHERLAND, H. A., M.B. Glasg., A.M.O. (II), Paddington;
RAMSAY, ISOBEL S. W., M.B. Aberd., A.M.O. (II), Lewisham;
KENT, STEPHEN, M.R.C.S. Eng., A.M.O. (II), Archway;
BARRETT, JOHN, M.B. N.U.I., A.M.O. (II), St. Andrew's;
STERN, DAVID, M.B. Edin., A.M.O. (II), Dulwich;
LONGMUIR, D. O., M.B., A.M.O. (II), Bethnal Green;
THOMAS, NEST, M.R.C.S. Eng., A.M.O. (II), St. Alfege's;
MADIGAN, D. G., M.B. N.U.I., A.M.O. (II), St. Luke's, Chelsea;
PALSER, E. G. M., M.B. Lond., A.M.O. (II), Archway;
LEVINE, DAVID, M.R.C.S. Eng., A.M.O. (II), St. Giles's;
LAIRD, G. B. L., M.B. Glasg., House Surgeon, St. Giles's;
MUIR, ANDREW, L.D.S. R.C.S., L.R.C.P. Edin., Temp. Part-time Dental Surgeon, Heatherwood;
RANDLE, ALAN, M.D. Lond., Med. Sup., St. Giles's;
YOUNG, B. A., M.D., M.R.C.P. Lond., Med. Sup., St. Alfege's;
KELLEHER, W. H., M.D. N.U.I., D.P.H., Med. Sup., South-Western;
WHEATON, C. E. W., M.D., M.R.C.P. Lond., Senior A.M.O. (I), St. Peter's;
KAHAN, ALEXANDER, M.D. Lond., Senior A.M.O. (II), St. Alfege's;
MACKEITH, R. C., B.M. Oxon., A.M.O. (I), Paddington;
ROBERTS, J. C., M.B. Lond., A.M.O. (I), St. George-in-the-East;
LAWSON, W. S. G., M.B. Lond., A.M.O. (I), St. Stephen's;
FRIEDLAND, COLIN, M.B. Cape Town, A.M.O. (II), Lewisham;
SMITH, J. I. M., M.R.C.S. Eng., A.M.O. (II), St. George-in-the-East;
HAMILTON, MAX., M.B. Lond., A.M.O. (II), Mile End;
JOHNSTONE, J. G., M.B. Aberd., Consulting Orthopædic Surgeon, attached to Central Medical Staff; and
MOORE, ELIZABETH M., M.B. Belf., M.C.O.G., Senior A.M.O. (II), Mile End.

Certifying Surgeons under the Factory and Workshop Acts: Dr. J. BINNIE (Longridge District, Lancashire); Dr. P. GIBBIN (Whitland District, Carmarthen); and Dr. W. WARD-SMITH (Bradford, East District of Yorkshire, West Riding).

Medical Diary

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES

SOCIETY FOR THE STUDY OF INEBRIETY.
TUESDAY, July 13th.—4 P.M. (11, Chandos-street, W.), Mrs. L. Blackett Jeffries, M.D.: Marriage in Relation to Alcohol and Drug Addiction.

PADDINGTON MEDICAL SOCIETY.
TUESDAY, July 13th.—9 P.M. (Tuberculosis Dispensary, 20, Talbot-road, W.), Mr. A. Lawrence Abel: Common Diseases of the Rectum and Anal Canal, with coloured cinematograph films of the Modern Operation for Internal Hæmorrhoids, and of the Abdomino-perineal Excision for Carcinoma of the Rectum.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY.
FRIDAY, July 16th.—5 P.M. (West London Hospital), annual general meeting.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL SANITARY INSTITUTE.
MONDAY, July 12th, to SATURDAY.—Health Congress at Birmingham.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.
MONDAY, July 12th, to SATURDAY, July 17th.—ALL SAINTS' HOSPITAL, Austral-street, S.E. Afternoon and evening post-graduate course in urology.—HOSPITAL FOR DISEASES OF THE SKIN, Blackfriars-road, S.E. Afternoon course in dermatology.—Open only to members of the fellowship.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.
THURSDAY, July 15th.—2 P.M., Dr. D. N. Nabarro: Syphilis in Childhood. 3 P.M., Dr. G. H. Newns: Colitis. Out-patient clinics daily at 10 A.M. and ward visits at 2 p.m.

WESTMINSTER HOSPITAL.
THURSDAY, July 15th.—4.30 P.M., Dr. Donald Paterson Children's Conference.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION
TUESDAY, July 13th.—4 P.M. (St. James' Hospital, Ouseley-road, S.W.), Mr. R. L. Dodds: Version.

LORD NUFFIELD'S GIFTS.—The Birmingham Hospital Centre has received a cheque from Lord Nuffield for £146,581 to cover the cost of the erection of the nurses' home and college of nursing. Five years ago, when it was decided to build the centre he gave £52,000 towards the scheme. Towards the total cost of £1,250,000, the sum of £800,000 has already been subscribed. Lord Nuffield has also given £30,000 to the Royal Berkshire Hospital, Reading, in connexion with the centenary extension scheme which is to cost £150,000. His gift is to be used for the erection of a new block of buildings, containing a children's ward, a maternity ward, and a surgical ward.

NOTES, COMMENTS, AND ABSTRACTS

ADOPTION OF CHILDREN

AFTER many abortive attempts at legislation Mr. Galbraith's Adoption of Children Bill reached the Statute Book on August 4th, 1926, and came into force on Jan. 1st, 1927, thus placing the adoption of children on a basis as secure in this country as it is in nearly every civilised land. The procedure set up by the Act was entirely new and unfamiliar to the magistrates who were to administer it; and for a long time it was by no means easy to get the intention of the legislature carried out smoothly, except in the High Court. Gradually the magistrates have come to live up to their non-penal functions and with the growth of juvenile courts the practice of legal adoption has steadily increased from year to year. In 1936 the total of adoption orders was 5180.

But this Act by no means solved completely the problem of the State's responsibility for "children maintained for a reward," and important additional safeguards came into operation on Jan. 1st, 1933, when the second and fourth schedules of Part V of the Children and Young Persons Act, 1932, came into force. Allegations of abuse in connexion with the adoption of children were freely made in Parliament and in January of last year Sir John Simon appointed a departmental committee to inquire into the methods pursued by adoption societies or other agencies engaged in arranging for the adoption of children, and to report what measures should be taken in the public interests to supervise or control their activities. Miss Florence Horsbrugh, M.P., was chairman of this committee, which had six male members of wide experience, with Mr. J. A. R. Pimlott, of the Home Office, as secretary.

Their report which was issued on Wednesday (H.M. Stat. Office, Cmd. 5499, 1*s.*) recommends that it should be an offence to carry on an adoption agency unless it is licensed by the local authority, the conditions of the licence to be prescribed by the Home Secretary. The committee is definitely not in favour of restricting the arrangement of adoptions to public authorities or to societies specialising in adoption. They do not want adoption to become a State monopoly and are desirous that any organisation concerned with the welfare of children should be at liberty to take up this work; but they regard some form of compulsion as essential. Evidence of hardship to children under the existing regulations left them in no doubt on this point. They were agreed, although not quite unanimously, that some form of licence would be the best method of regulating such adoption agencies as do not come under the Poor Law Act of 1930. A licence would only be granted if the county or local borough council decides that the agency is really a charitable society governed by a responsible committee and with competent and adequate staff for ensuring that the conditions of the licence are carried out.

It is to the conditions of the licence that the committee attaches so much importance; for it would be impossible, even if desirable, for the licensing authority to inspect all homes in which children are placed. While admitting the much greater risk involved they would not dissuade private persons from arranging adoptions. The duty of notifying the Infant Life Protection Authority should, however, be laid on both the agent and the person receiving the child. Persons obtaining children from licensed agencies would be free from the supervision of the local authority to which those who obtain children from private agents would be subject. The effect of these proposals would place the licensed agency in a more favoured position than private agents, and this is regarded as right and proper.

Other recommendations would make it impossible for a British child to be taken out of the country for adoption by foreign nationals. British subjects living abroad would require a licence from the Metropolitan police authority. It should, the committee thinks, be made an offence for any private person, without leave of the court, to receive payment for negotiating an adoption; and they would prohibit any advertisement offering or seeking children for adoption, except by the societies and agents regulated by licence.

There is much else of general interest in a report which bears the impress of careful observation and wise deduction.

ASTHMA FROM ANIMALS

IN a paper on bronchial asthma provoked by various animals, A. de Besche points out that more and more cases of asthma prove, on investigation, to be allergic rather than nervous in origin. (*Acta med. scand.*, 1937, **92**, 209.) As long ago as 1909 he suggested that horse-asthma in man is due to anaphylaxis. Often the reaction is specific, a response to a single antigen; but more often there are several trigger-substances: thus a boy subject to horse-asthma showed an asthmatic response also to hay, fish, and strawberries. de Besche thinks that tolerance to an antigen cannot be acquired by allergic subjects and that treatment should aim at being preventive. This, especially among town-dwellers, is not so difficult as to be impossible; but he quotes the case of a lady subject to cat-asthma who had an attack after eating "hare ragoût" in a restaurant, and in persons with the appropriate hypersensitiveness even a strong smell of fish is said to have caused urticaria and asthma occasionally. de Besche describes a simple diagnostic test for susceptibility to animal asthma. The horse or other animal is touched with the finger, which is then placed lightly on the patient's conjunctiva. A positive reaction consists in redness and sometimes œdema of the conjunctiva with a feeling of burning and itching in the eye.

CHILDREN'S QUESTIONS

CONSCIENTIOUS modern parents, those patient oxen striving constantly, if clumsily, to do the right thing for their offspring, have by now learnt that all children's questions are to be answered truthfully. The stork-cum-gooseberry bush mythology having been largely abandoned, some have discovered to their surprise and relief that the young child is quite as unshockable as, let us say, a psychiatrist, and indeed remains so unless instructed otherwise. But the abandonment of the convenient lies of a less enlightened age does not mean that the business of parenthood is simpler to-day than yesterday. On the contrary, the parent's lot is less of a sinecure than ever and the prospect of being subjected to a perpetual viva-voce examination is probably a powerful deterrent to reproduction. To answer truthfully questions about the "facts of life" may present comparatively little difficulty, but what of the countless other questions now possible? In "The New Era in the Junior School," E. B. Warr [1] quotes some of the posers set by junior examiners to their parents and teachers. "How heavy is the nucleus of an atom?" asks one little brute; "Who

[1] The New Era in the Junior School, by E. B. Warr. London: Methuen & Co. 1937. Pp. 136. 3*s.* 6*d.*

made God?" asks another and, again, "How is it we grow without either feeling it, or knowing it?" asks a third. A parent with special knowledge may, it is true, be offered an occasional full-toss to leg, so to speak, which gives him heart. To such a one, for example, it may be child's play to explain simply and accurately how a refrigerator works, how gas is made, or the process of electro-plating. But let him beware of thinking prematurely that he has mastered the bowling.

CEREBRAL CHANGES IN SPASMODIC TORTICOLLIS

TORTICOLLIS is not a cause of death and it is thus difficult to collect evidence of its pathology. The spasmodic type in particular presents features which suggest degenerative changes in the basal nuclei, and B. J. Alpers and C. S. Drayer (*Amer. J. med. Sci.* March, 1937, p. 378) have reported a case which bears out this view. Their patient was under observation from the age of 33 until he died aged 90, and the opportunity arose to examine his brain at autopsy.

The torticollis first appeared after an accident, when he was struck in the right eye which lost its sight. The spasmodic movements of his head and neck that developed did not prevent his continuing his work as a fireman. A second accident 12 years later resulted in a severe burn, and his mental condition was so affected that he had to be placed in hospital to prevent his committing suicide. It was then found that he had a flattening of the right side of the face, and a definite impairment of the motor system. The tongue had a coarse tremor, and the head was tilted to the left with the chin pointing to the right shoulder. There were several types of involuntary movement of the head, including a coarse tremor, constantly present and exaggerated by emotion, and nodding, choreiform, and athetoid movements, some of which spread also to the shoulders and the hands. The brain at autopsy showed atrophy of the neostriatum, severe disease of the large ganglion cells of the caudate nucleus and the putamen, with less severe involvement of the small ganglion cells; the pallidal ganglion cells were moderately affected. The cortex showed no specific changes and the other basal nuclei were normal. The vessels of the caudate and putamen were in good condition and showed no true sclerosis.

Alpers and Drayer have found reports of four other cases of torticollis with post-mortem findings. All showed degenerative changes in the brain. In three the changes were mainly confined to the corpus striatum, and were greatest in the caudate nucleus and the putamen of the thalamus. In one case there was a more generalised change, with involvement of the cerebral cortex and cerebellum, as well as of the basal nuclei. In another case the degeneration involved the frontal and parietal lobes of the right cerebral hemisphere. Of the five cases, therefore, there were three with more or less purely striatal lesions, all giving clinical pictures of definite torticollis. The suggestion is that further post-mortem examinations of similar cases might reveal a definite organic basis for the symptoms.

THE CHEMICAL COMPOSITION OF TEETH

IT has been established beyond doubt that the tooth substance belongs to the apatite series, which is composed of tricalcium phosphate with either calcium chloride or calcium fluoride. Probably because of this, fluorine is commonly believed to be a normal constituent of teeth. Recent spectroscopic researches by F. Lowater and M. Murray, however, show that this is not so (*Biochem. J.* 1937, **31**, 837). But they did find certain other unexpected elements—namely, magnesium, silver, lead, sodium, strontium, barium, chromium, tin, zinc, manganese, titanium, nickel, and vanadium. These were all found in both enamel and dentine from non-carious teeth of Londoners as well as in the teeth of dogs and rats. Chlorine and fluorine, although possibly present in traces in the human subjects, were definitely absent from both the dentine of dogs' and the enamel of rats' incisors. In mottled teeth from inhabitants of Maldon, Essex, where the water-supply contains fluorine, the enamel yielded evidence of both fluorine and chlorine, while the former alone was found in the dentine. Potassium was not found in either enamel or dentine of the Londoners, but its characteristic spectroscopic lines were observed—though they were "very weak"—in both parts of the Maldon mottled teeth. Although the dentine from dogs' teeth contained no potassium, both control rats and those fed on a diet containing fluorine yielded more than traces of this element.

The presence of silver and tin in rather larger amounts in the Maldon teeth than in those of Londoners—even when non-carious—may possibly be due to contamination with filling materials, although every care was taken to avoid this in the few specimens available. The loss of pigment in mottled teeth seems to be associated with an iron deficit. The presence of titanium and vanadium has not, apparently, been observed before. The latter may have replaced phosphorus in the apatite complex; it has been found in the bodies of certain ascidians in the Mediterranean, but so far as we know has not before been found in mammalian tissues. It is certainly not an element usually considered as present in tissues. The occurrence of zinc is interesting in view of its presence in many tissues, bones being specially rich in this element, their zinc content amounting to 1 or 2 hundredths per cent.

This investigation is one of a series carried out by Murray, who has investigated the extent to which magnesium replaces calcium in the apatite molecule and other elements or groups replace the typical halides of the native mineral apatite—chlorine and fluorine—as suggested by Robison.

Births, Marriages, and Deaths

BIRTHS

BALFOUR.—On July 2nd, at 3, Wilbraham-place, S.W., the wife of Dr. G. M. Balfour, of Clifton House, Cowes, of a son.

FRANCE.—On July 4th, at Ludlow, Bromley Common, Kent, the wife of Francis France, M.B., of a son.

ITTNER.—On June 7th, the wife of Dr. Martin H. Ittner, of 2600 Hudson Boulevard, Jersey City, U.S.A., of a son.

KERWICK.—On June 22nd, the wife of Captain T. R. J. P. Kerwick, Royal Army Medical Corps, of a daughter.

MURRAY.—On July 4th, at Welbeck-street, London, the wife of Dr. J. Barrie Murray, of a son.

ORLEY.—On June 29th, at Sutton, the wife of Dr. Alexander Orley, of a son.

PRIDIE.—On June 24th, the wife of Mr. Kenneth Pridie, F.R.C.S., Clifton, Bristol, of a daughter.

PYRAH.—On July 4th, at Leeds, the wife of Mr. Leslie N. Pyrah, F.R.C.S., of a son.

WILSON.—On June 29th, at St. Dennis, Cornwall, the wife of Dr. C. M. Wilson, of a son.

MARRIAGES

DUNSCOMBE—CHANDLER.—On July 3rd, at Hampstead Parish Church, Nicholas D. Dunscombe, M.B., to Irene Elizabeth Chandler, M.R.C.S., eldest daughter of Mr. P. W. Chandler, Master in Chancery.

KNIGHT—JACKSON.—On July 3rd, at the Wesleyan Church, Skelmanthorpe, Dr. Wilfred Curtis Knight, youngest son of Mr. Ralph C. Knight, of Stowmarket, Suffolk, to Barbara Mary, youngest daughter of Sir Percy Jackson.

LITTLE—BEDFORD.—On June 22nd, at the Cathedral, Simla, Captain J. Little, I.M.S., M.B., to Joyce Beryl, younger daughter of Mr. and Mrs. Bedford, of Simla, India, and Rochampton.

LOXTON—EDMONDS-JONES.—On June 26th, at St. Mary's Church, Longworth, Geoffrey Ernest Loxton, M.B., to Margaret Joyce, only daughter of the Rev. R. Edmonds-Jones, Rector of Longworth, Oxfordshire.

MAYNARD—FITZGERALD.—On July 1st, at St. John the Evangelist Church, Bath, Edward Forster Maynard, M.D., of Maresfield, Sussex, to Anne FitzGerald, youngest daughter of the late Thomas FitzGerald, of Carrigtowhill, co. Cork.

DEATHS

CLARKE.—On July 4th, at St. Thomas's Hospital, following an operation, John Andrew Clarke, M.B. R.U.I., Ivy House, Luton, Beds.

HODGES.—On June 29th, at Burnley, Alfred Ernest Hodges, L.R.C.P., L.R.C.S. Edin., aged 68.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.